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The Atari® Book™

The ultimate collector's guide to Atari

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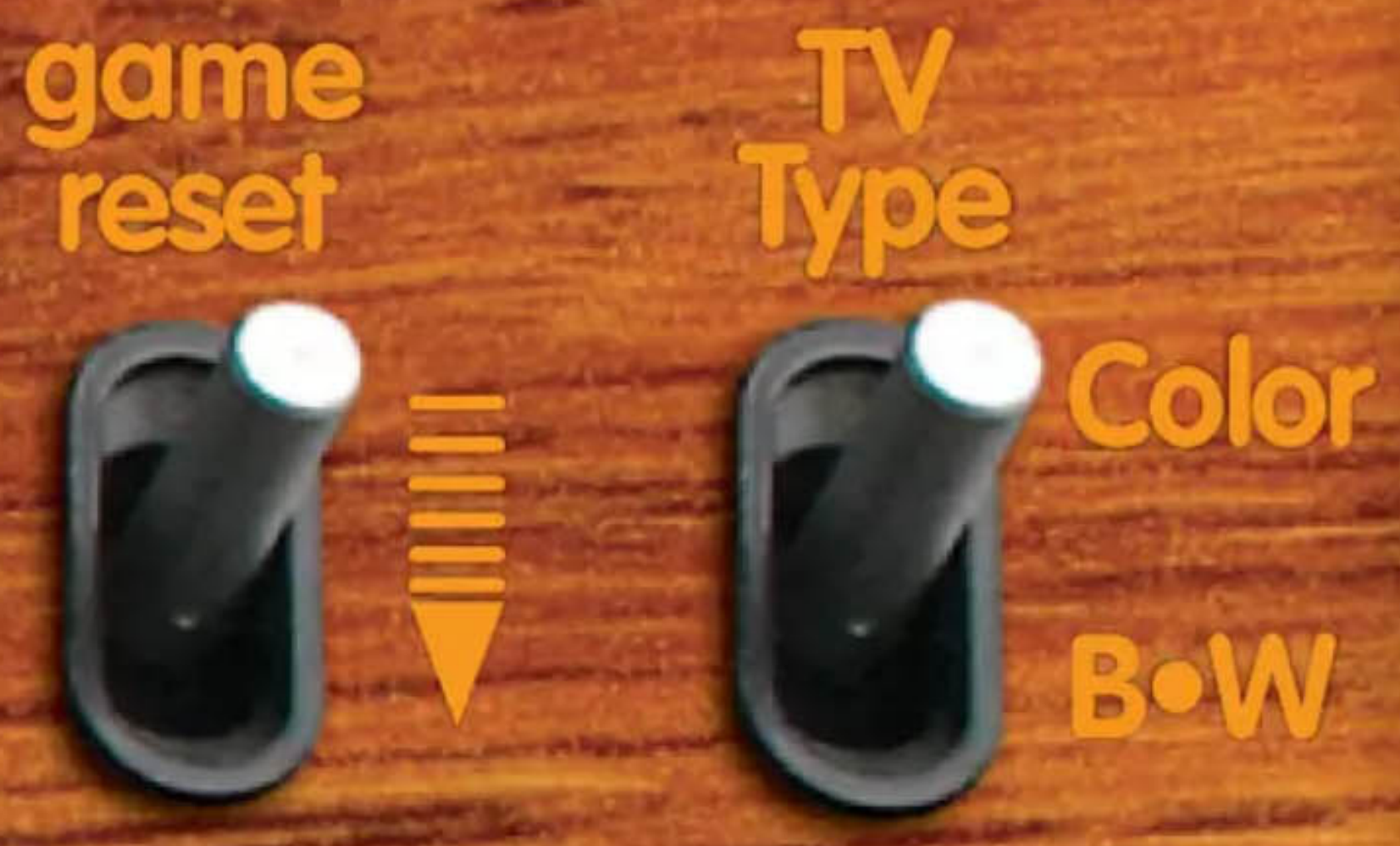
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Over 200 pages of essential Atari knowledge

Atari 2600 • Atari 5200 • Atari 800XL • Atari 7800 • Atari ST • Atari Lynx • Atari Jaguar

Welcome to

The Atari Book™

Welcome to this celebration of everything Atari. Ever since Nolan Bushnell first co-founded Atari Inc with Ted Dabney in 1972, the name has become synonymous with games. Atari Inc attracted some of the best talent in the industry, many of who were raising the bar when it came to creating new genres and new hardware, with their goal being to create the best games possible. Atari dominated the arcades, then performed the same miracle in homes with the release of the Atari VCS, or Atari 2600 as it's now more commonly known. Pong was Atari's first major success, but it wouldn't be the last and many other hits followed, including Asteroids, Pit Fighter and Paperboy. Even when Atari Inc was closed down, it wasn't the end of the brand, as the company rose from the ashes in the form of Atari Corporation, under the watchful eye of ex-Commodore head Jack Tramiel. Atari Corporation itself would eventually become a relic of the past, but the Atari brand, and more importantly, its iconic games, live on. In this revised edition, we explore a different selection of games and developers key to Atari's history. So join us as we highlight some of Atari's best machines, the biggest icons and the greatest games.

adventure
space invaders
ATARI
paddle
paddle

The Atari Book™

Imagine Publishing Ltd
Richmond House
33 Richmond Hill
Bournemouth
Dorset BH2 6EZ
☎ +44 (0) 1202 586200
Website: www.imagine-publishing.co.uk
Twitter: @Books_Imagine
Facebook: www.facebook.com/ImagineBookazines

Head of Publishing
Aaron Asadi

Head of Design
Ross Andrews

Production Editor
Sanne de Boer

Senior Art Editor
Greg Whitaker

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>
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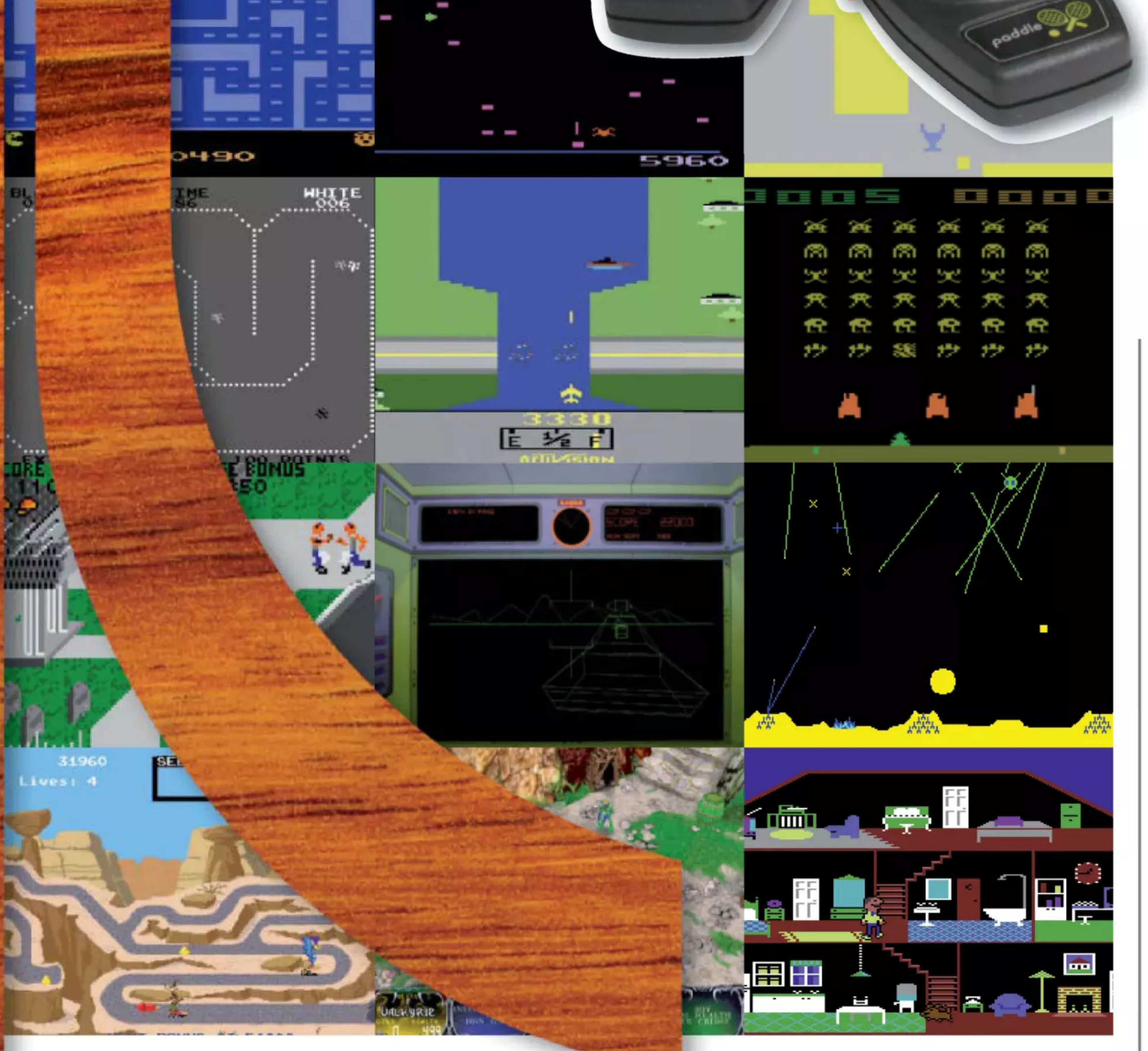

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video computer system
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ATARI

10 Atari 2600

“A STUNNING SYSTEM WITH A GREAT RANGE OF CLASSIC GAMES”

YOU REALLY NEED A 2600…

DOOM
JAGUAR
64-BIT INTERACTIVE MULTIMEDIA SYSTEM
ATARI
I'M GOING TO HELP YOU IN YOUR QUEST!

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DATAFILE

YEAR RELEASED: 1978

ORIGINAL PRICE: £169

BUY IT NOW FOR: £30+ ($45+

ASSOCIATED MAGAZINES: TV GAMER

WHY THE ATARI 5200 WAS GREAT…

EVEN TODAY THE ATARI 2600 IS A THING OF BEAUTY. BUILT TO LAST AND FEATURING THAT FAMOUS WOODEN VENEER, FEW THINGS IN LIFE COULD GIVE US AS MUCH PLEASURE AS A DAY SPENT IN FRONT OF THE TV PLAYING SPACE INVADERS OR COMBAT. IT MAY HAVE ALL ENDED IN TEARS FOR ATARI, BUT THE 2600 REMAINS ONE OF THE DEFINING ASPECTS OF ITS LEGACY.

VIDEO COMPUTER SYSTEM by ATARI
The Super System...MORE GAMES. MORE FUN
ATARI

ATARI 2600

AFTER ITS RELEASE OF ITS PORT OF SPACE INVADERS, THE ATARI 2600 WAS TO BECOME AN OVERNIGHT SENSATION, FORGING MILLIONS OF MINDS TO THE WONDROUS BEAUTY OF VIDEOGAMES. IT'S EASY TO LOOK BACK AT THE SUCCESS OF ATARI'S HOME CONSOLE NOW, BUT THINGS WEREN'T LOOKING SO STRAIGHTFORWARD WHEN THE MACHINE WAS FIRST PROPOSED…

game
reset
ATARI

It's one of the most iconic consoles Atari ever made, and helped turn the company into a multi-million dollar behemoth, but the birth of the Atari 2600 wasn't as straightforward as many have been led to believe. In fact it was during the summer of 1975 that Atari's research lab, Cyan, would hit on its most important contribution to the now fondly remembered console thanks to Steve Meyer and Ray Milner. The question they had been asking themselves on the trip back from a meeting at Atari was "Could we leverage microprocessors to create a game console that can support multiple interchangeable games?". As it turns out, management had also been pondering the very same idea as Meyer and Milner, but wanted to take it a step further. "Nolan, and Joe (Keenan, Atari President), and I sat around as a team and decided we needed a cartridge based game system," said Allan Alcorn, about Atari's classic console. With Alcorn giving the go ahead to Milner and Mayer to being the research, upon returning to the Cyan facilities the duo began researching what microprocessors were available on the fledgling market to start basing their proof of concept around.

Time for a trip

Milner and Meyer decided to take a trip up to the electronics convention Wescon after receiving a letter from a new, unheard of company who wanted them to come take a look at their new microprocessor. They were soon to discover that the company was a young upstart in microprocessors, in an industry that was itself very young, and was poised to rock the foundation. That upstart happened to be MOS Technology, which was led by Chuck Peddle.

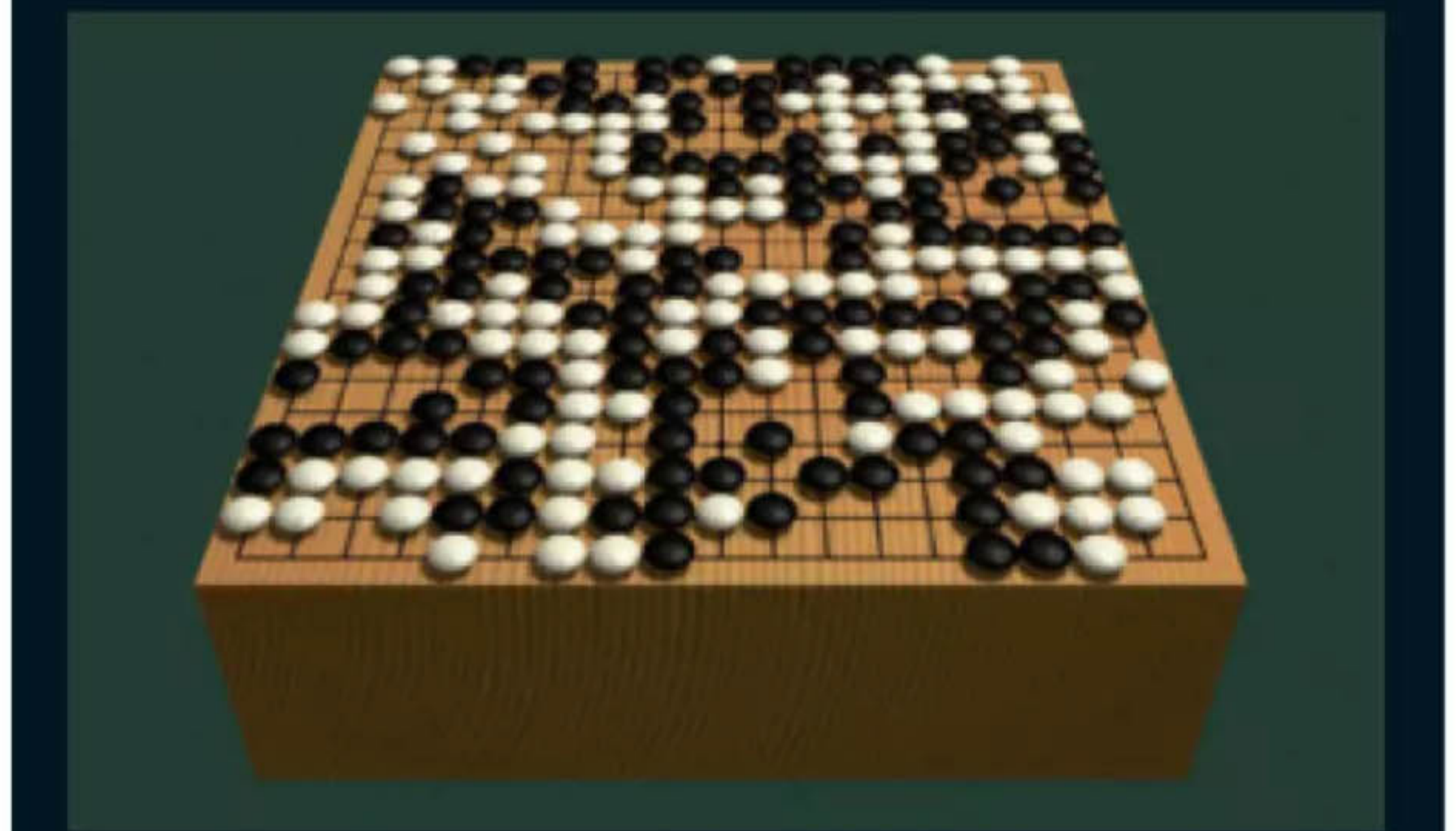
After getting their 6502 with documentation, the two headed in to see Peddle and his people demonstrating the microprocessors. They met and talked for about an hour and a half, finally negotiating with Peddle to come over to Cyan the very next day to discuss plans for using MOS's 6502 and support chip in their proposed game system. Peddle and his team then headed over to Cyan, where they met and discussed the proposal over the next two days. In the end, Cyan decided to sign on with MOS Technology's chip, but not the 6502. Because it was being targeted as a mass produced game system, cost was something of an issue for Cyan and the proposed 6507 was more in line to meet that goal. With the 6507 and the support chip, they'd just need to design a custom chip for graphics and sound support, which would be a lot easier.

By December of '75, Milner and Mayer were able to get a working, although rather buggy prototype going, to play a home version of Atari/Kee's hit arcade game *Tank*. Using the 6502 development setup along with the beginnings of a custom graphics chip, the two had even appropriated the joysticks from a *Tank* coin-op for the primordial systems controls, which gave the project a far more authentic feel.

At that point a young engineer by the name of Joe Decuir was hired by Alcorn to help debug the project and bring it back from Cyan to Atari for it's next stage, working as a bridge of sorts. Joe Decuir had been a graduate of the local UC Berkeley and working in medical instrumentation design but looking for a way out. " We were using expensive new equipment

ORIGINS

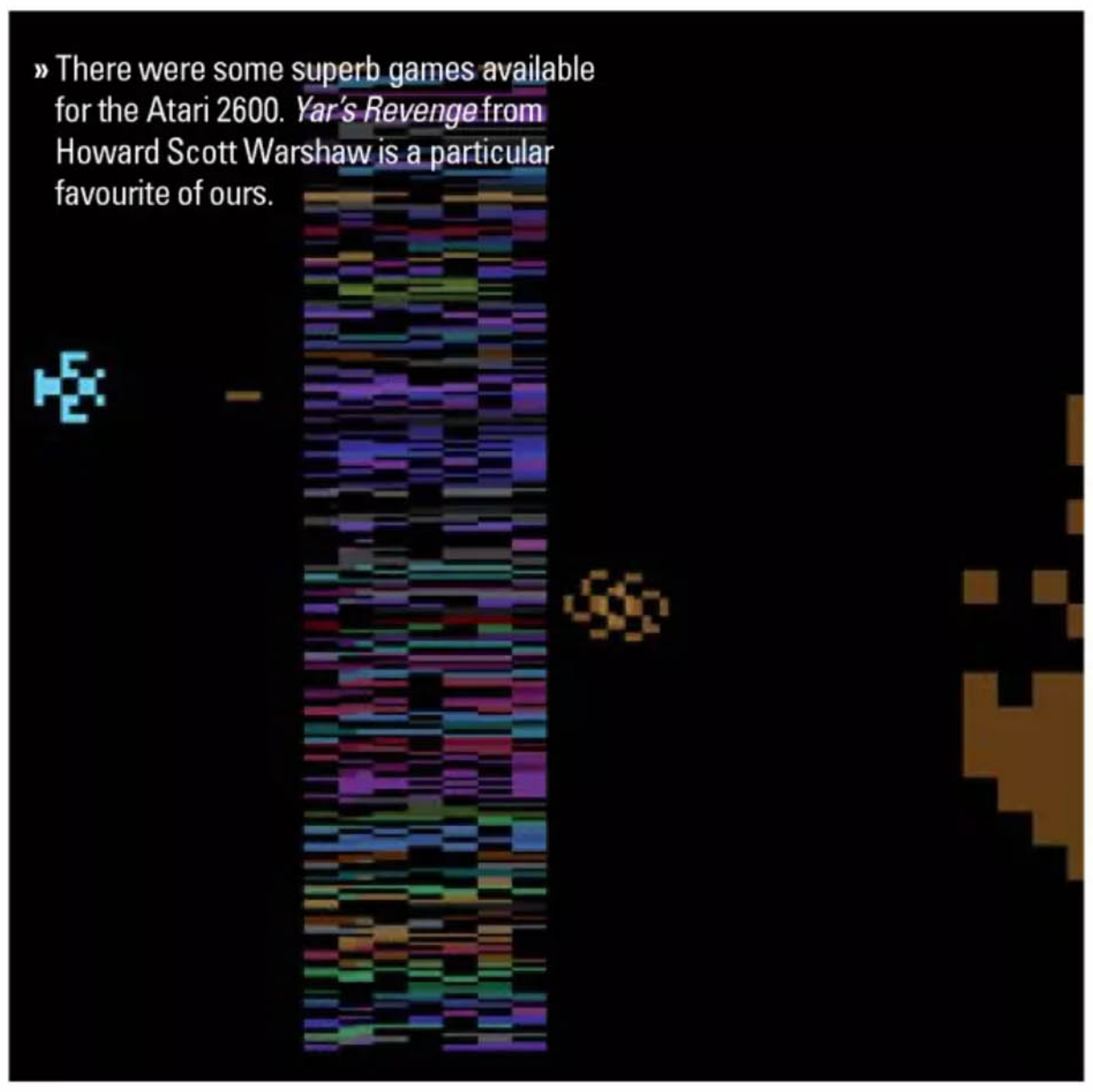
The name of "Atari" originates from the one of the world's oldest board games, *Go*, which Nolan Bushnell was known to enjoy playing and denotes the following: "a group of stones is in Atari if it has only one liberty left." As for the Atari symbol, it was designed by George Opperman in the early 1970s. By all accounts, *Pong* was very popular and the large letter 'A' represented two opposing videogame players with the centre of the *Pong* court in the middle. Got that? As for classic 2600 games that we still love playing, you really can't go wrong with: *Combat, Demon Attack, Adventure, River Raid, Solans, Pitfall!, Yars Revenge, Kaboom, Frogger, Haunted House* and *H.E.R.O.* Also, the Intellivision was not the only system to feature voice synthesis as the 2600 also had *Quadron, Open Sesame* and *Berzerk* – the latter being an enhanced but hacked version. Bless…



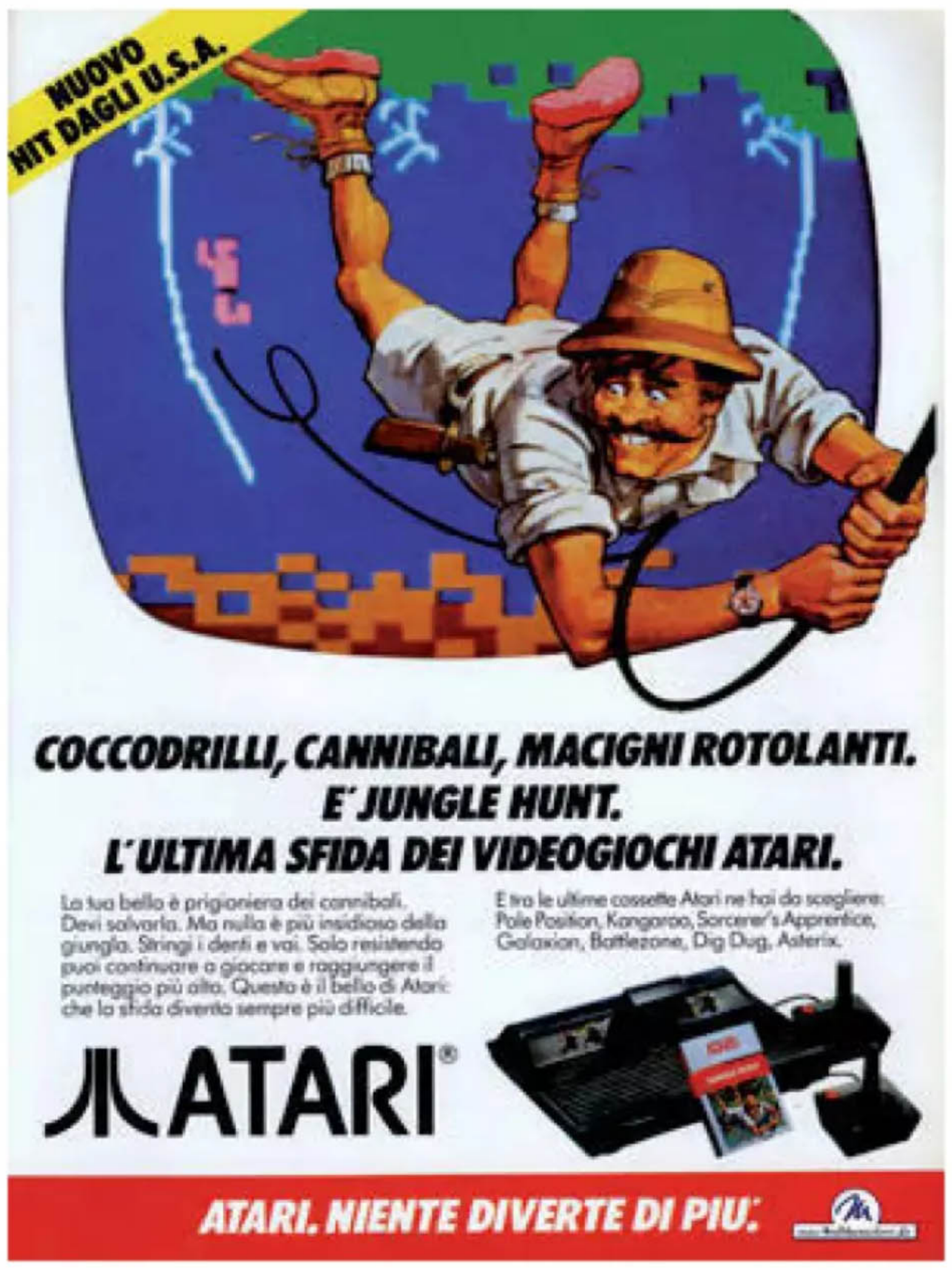
» This is *Go*. It's loved the world over thanks to its challenging and deep gameplay and is held in particularly high regard in Japan.

video computer system
game program
bowling
ATARI

» The Atari 2600 was a massive success for Atari and set the standard for everyone else to follow. It shifted over 30 million units in its lifetime.



» There were some superb games available for the Atari 2600. *Yar's Revenge* from Howard Scott Warshaw is a particular favourite of ours.



NUOVO HIT DAGLI U.S.A.

COCCODRILLI, CANNIBALI, MACIGNI ROTOLANTI.
E' JUNGLE HUNT.
L'ULTIMA SFIDA DEI VIDEOGIOCHI ATARI.

La tua bella è prigioniera dei cannibali. Devi salvarla. Ma nulla è più insidioso della giungla. Stringi i denti e vai. Solo resistendo puoi continuare a giocare e raggiungere il punteggio più alto. Questo è il bello di Atari: che la sfida diventa sempre più difficile.

E tra le ultime cassette Atari ne hai da scegliere: Pole Position, Kangaroo, Sorcerer's Apprentice, Galaxian, Battlezone, Dig Dug, Asterix.

ATARI®

ATARI. NIENTE DIVERTE DI PIU.

» One of the classic retro 2D action/adventure games: Activision's *Pitfall!*. Quite why brick walls exists in secret underground chambers in a forbidden jungle is anyone's guess…

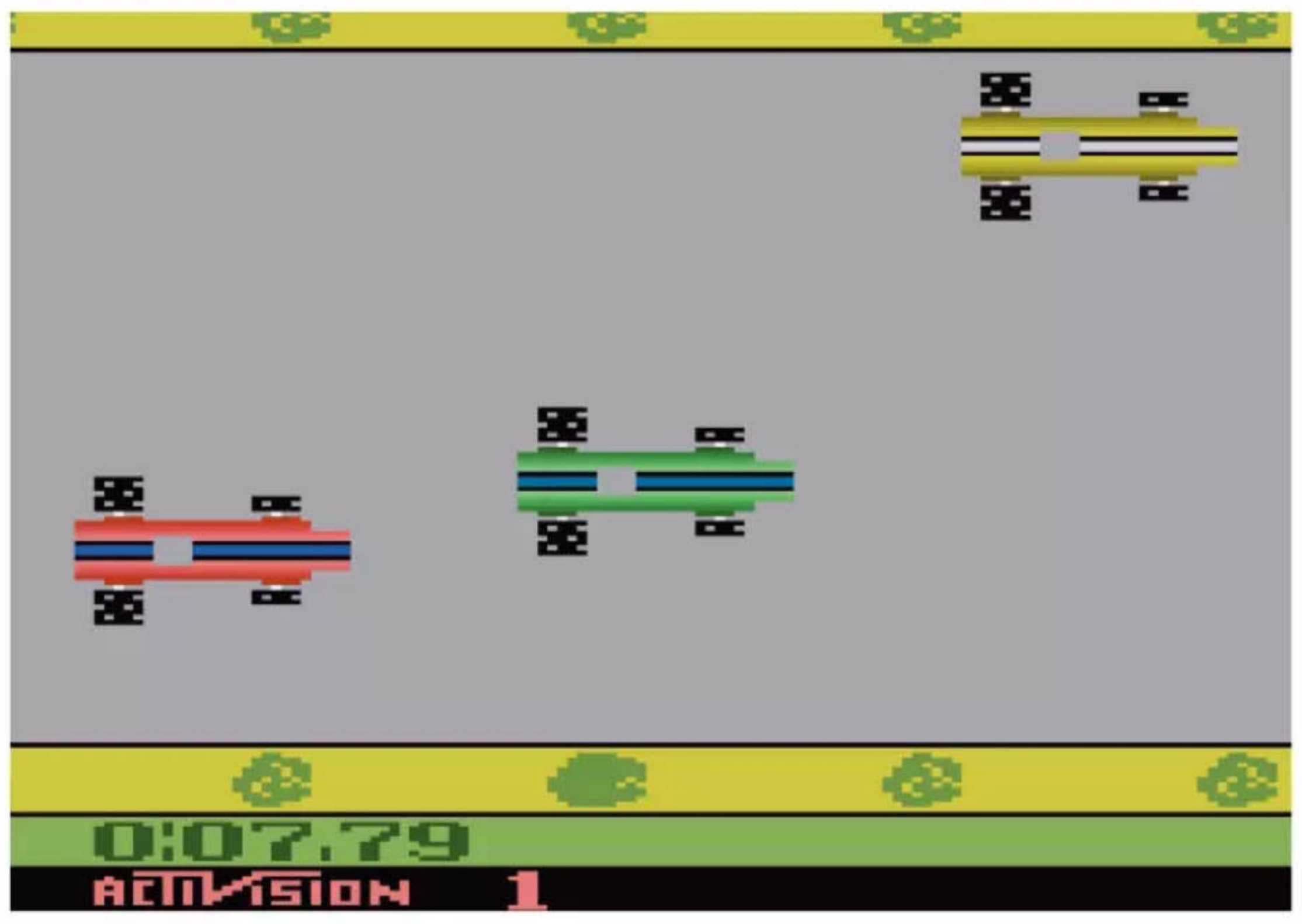
to try heroically to save people in really bad shape. Most of them (91%) died either way. It was kind of demoralizing." A friend of Decuirs, Ed DeWath, had known Milner and recommended Decuir for Cyan. Decuir actually wasn't sure about going in to games, but luckily for all of us he was convinced by his father and another friend. "My father said 'Pick the job that teaches you more', and Cyan/Atari had the potential to teach chip design," Decuir said about that pivotal moment, which helped shape the future of Atari's console. "My friend Greg said 'you can do good for the world with games. Most people are sick by their own hand: smoking, bad eating, etc. and are also lonesome and bored. Go ahead and entertain them.'"

The Decuir/Miner factor

Decuir listened to the advice of his good friend and immediately set about debugging the demo system, and one of the first things he had to do was have an account created on the DEC PDP-11 timesharing system the group was using for cross-assembling the demo game code. Needing a password, he chose the name of his favorite bike (which he still owns and rides to this day), Stella. The name would stick and eventually become the code name for the 2600's custom graphics chip, but in the mean time Decuir's goal was getting the *Tank* game further along in time for a February 1976 demonstration to Bushnell, Keenan, and Alcorn, who were all eager to see Decuir's progress. The prototype's architecture at that time was extremely influenced by the coin-op arcade game design Cyan had also done for Atari. That would certainly make sense, given the goal of the 2600 was to play all the early and mid 1970's coin-op games Atari had produced.

Now that the project was approved to move on and come down from Cyan to Atari, Atari was going to have to bring someone on board in order to design the full custom graphics chip. They knew none of the engineers that were currently in coin-op would be up to the task of that advanced custom chip layout design called VLSI (Very-Large-Scale Integration) so they decided to look for a suitable expert to help them achieve their dream.

"I'd never designed a chip like that before, so I didn't want to do that and that's when I brought Jay Miner to do it since he'd already



» *Grand Prix* was a belter of a driving game and still plays well today; even when compared to visual eyeball candy driving sims on the 360!

» The original console of the Atari 2600 released in 1977. With wooden panelling from a Swedish log cabin and immune to damage, it was alleged that the basic design was influenced from German weapon technology from 1945…

» In the early 1980s, the very sight of the 2600 was to be every schoolboy's wet dream and Santa soon had his elves making millions of them.

PITFALL!
SPACE SHUTTLE
A JOURNEY INTO SPACE
dventure
ce invaders
combat
bowling
STAR WARS
THE EMPIRE STRIKES BACK

had experience in designing those chips," said *PONG-On-A-Chip* designer Harold Lee about the introduction of Jay Miner.

Alcorn and Lee had known about Miner because of his previous work on helping them with the "*PONG-On-A-Chip*" layout at Synertek. Now after setting up Synertek as a major secondary source for 6502 chip which was fast gaining popularity in the industry, Alcorn used that as leverage for prying Miner away from Synertek. Promising large chip orders in the near future, as Atari began using the 6502 in coin-ops now as well, he was able to get Miner under an Atari badge. Decuir had already been notified after the February demonstration that he was moving down to Atari, and with Miner on board now he'd be apprenticing directly under the man Alcorn described as being "the best chip layout guy on the planet" at that time. Together they would be leading the transition from the Cyan proof of concept to a fully produced game console, complete with the first of its kind for a game console custom graphics chip. Larry Wagner was also added as head of software development, and he would eventually be in charge of hiring the programmers who did the first 10 launch games - many of which would form Activision.

The final hurdle

Most of the engineering for the Consumer Division, since it was still just a small group of people, was taking place amongst their Coin-Op Division compatriots. After all, Atari had just started its foray in to the consumer arena and its main bread and butter at that time was still arcade games. Alcorn knew that they needed to keep the revolutionary console a secret from competitors, but also more importantly from a lot of management. "My job was to keep the hounds away from these guys. To keep away the corporate bean counters and just let them do their job. Which was about fifty percent of my time." So he rented a secret location far away on Division Street to let the now expanded team do their work. Of course that didn't last long, as without telling him, head of Coin-Op Engineering Steve Bristow rented the building right next door for Atari's new Pinball operations. Everything was in full swing.

"A HIGH QUALITY MACHINE WITH AN INCREDIBLE RANGE OF GREAT GAMES"

YOU REALLY NEED AN ATARI 2600

Under Jay Miner's leadership the 2600's architecture was formalized, restructuring the internal memory map, planned hardware registers, and making sure the synchronization between the 6507 microprocessor and the custom graphics chip was so tight that there was very little margin for error and less RAM (Random Access Memory) needed. RAM was extremely costly for the time, so the console would have to make due with the 128 bytes - yes, not even 1k of memory - on the 2600's third chip called RIOT (RAM-I/O-Timer) in order to be suitably sufficent.

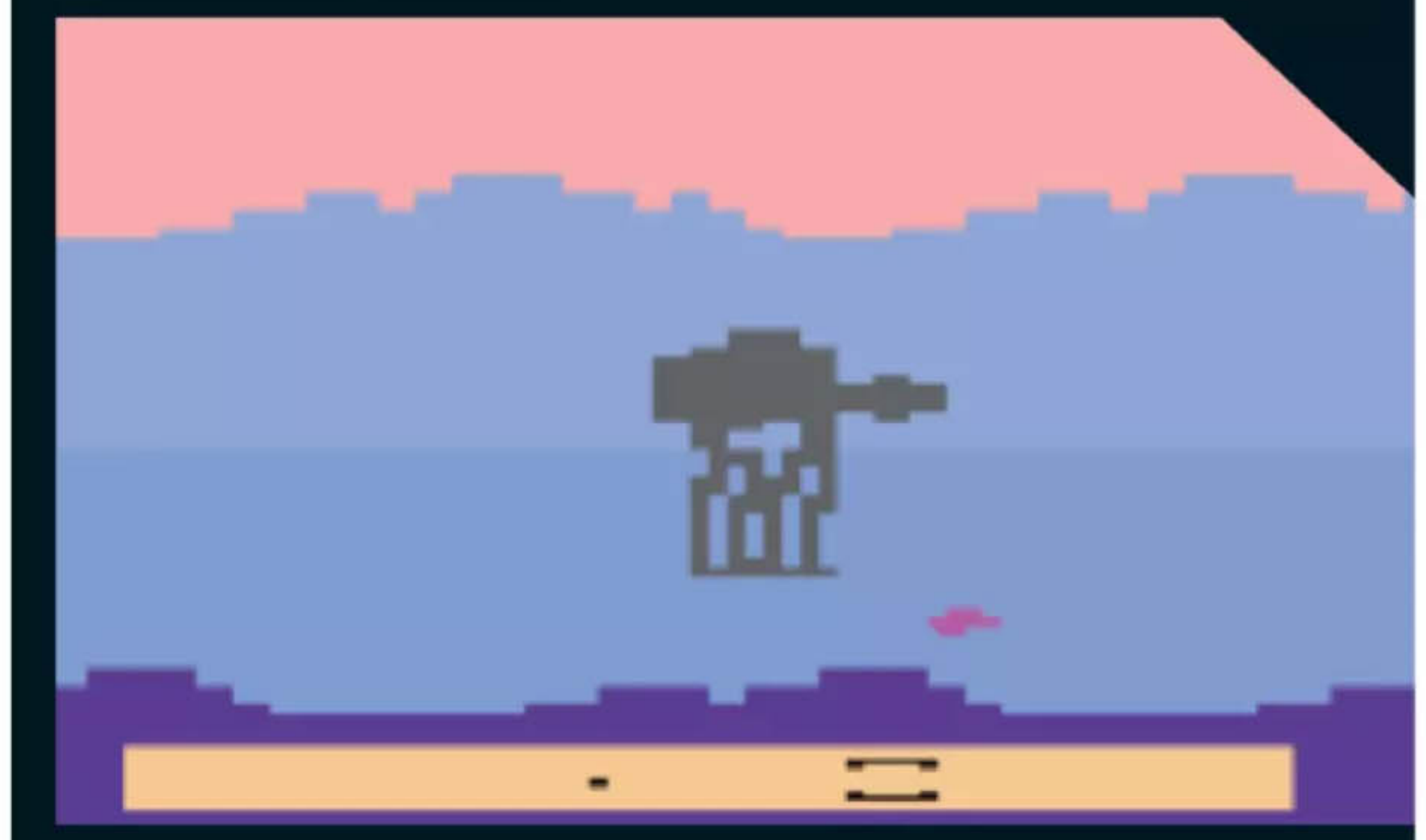
The custom graphics chip had now been renamed Stella by Miner after seeing Decuir's use of it, and soon Miner's boss Bob Brown (who also reported to Alcorn) used it for the name of the entire project (interestingly, it's now the name of a popular Atari emulator). In the mean time, Miner and Decuir took the bare bones graphics processing done on the original prototype and began producing a gate level version which would be the exact version that would be carried over in to chip form. When completed in chip format, Stella was officially renamed TIA (Television Interface Adapter).

Debuting in stores on October 14th, 1977 with a set price of US$199, Atari had sold out of its entire initial 400,000 unit production run to retailers for that Christmas season. The Consumer age at Atari had begun, and for millions of homes it was soon to be the Atari Age.

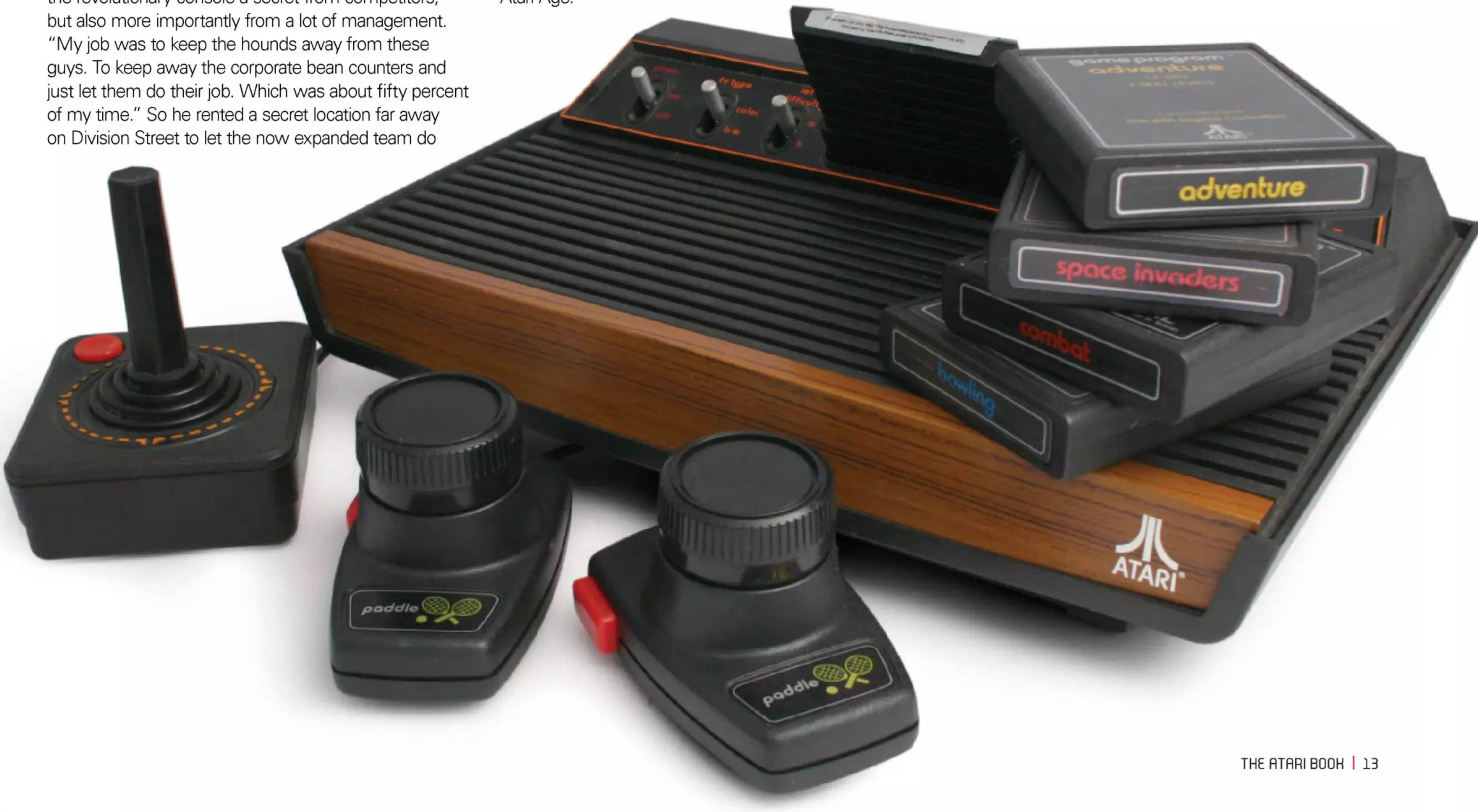
THE FILM CONNECTION

Sadly, a number of titles for the 2600 never saw the light of day and were to become a retro gaming myth. The classic hardcore skin flick, *Debbie Does Dallas*, was announced in 1982 by American Multiple Systems but was canned before completion; one can only wonder what the gameplay would have been like but it might have been similar to the Daley Thompson Decathlon joystick "waggle"… The cult comedy movie *Airplane!* was also canned as was *B-52 Bomber*. One game that definitely deserved to have been released was *Attack of the Baby Seals* – quite possibly a schlock b-movie horror title but one that sounds rather wondrous.

While a number of planned films did get cancelled, the Atari 2600 still managed a fair number of decent and not so decent adaptations. *E.T. The Extra Terrestrial* is now the stuff of legends, but the likes of *The Empire Strikes Back*, *Ghostbusters*, *Alien*, *Raiders Of The Lost Ark* and *Star Wars* proved that fun conversions of hit films were possible on Atari's machine.

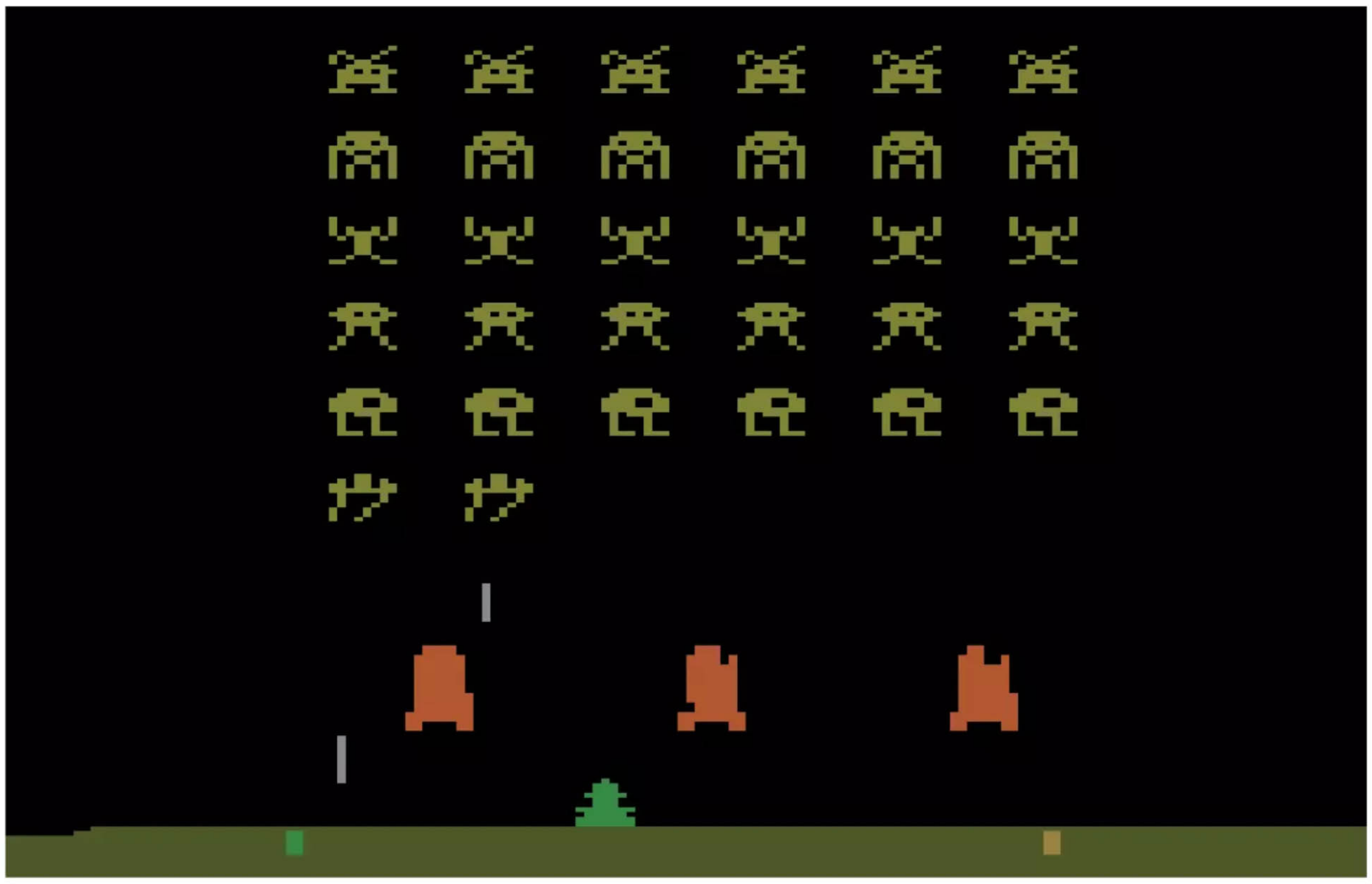


» *The Empire Strikes Back* was a film adaptation that did appear on Atari's console. It's a cracking game as well, playing like *Defender* with AT-ATs.



ATARI 2600: PERFECT 10 GAMES

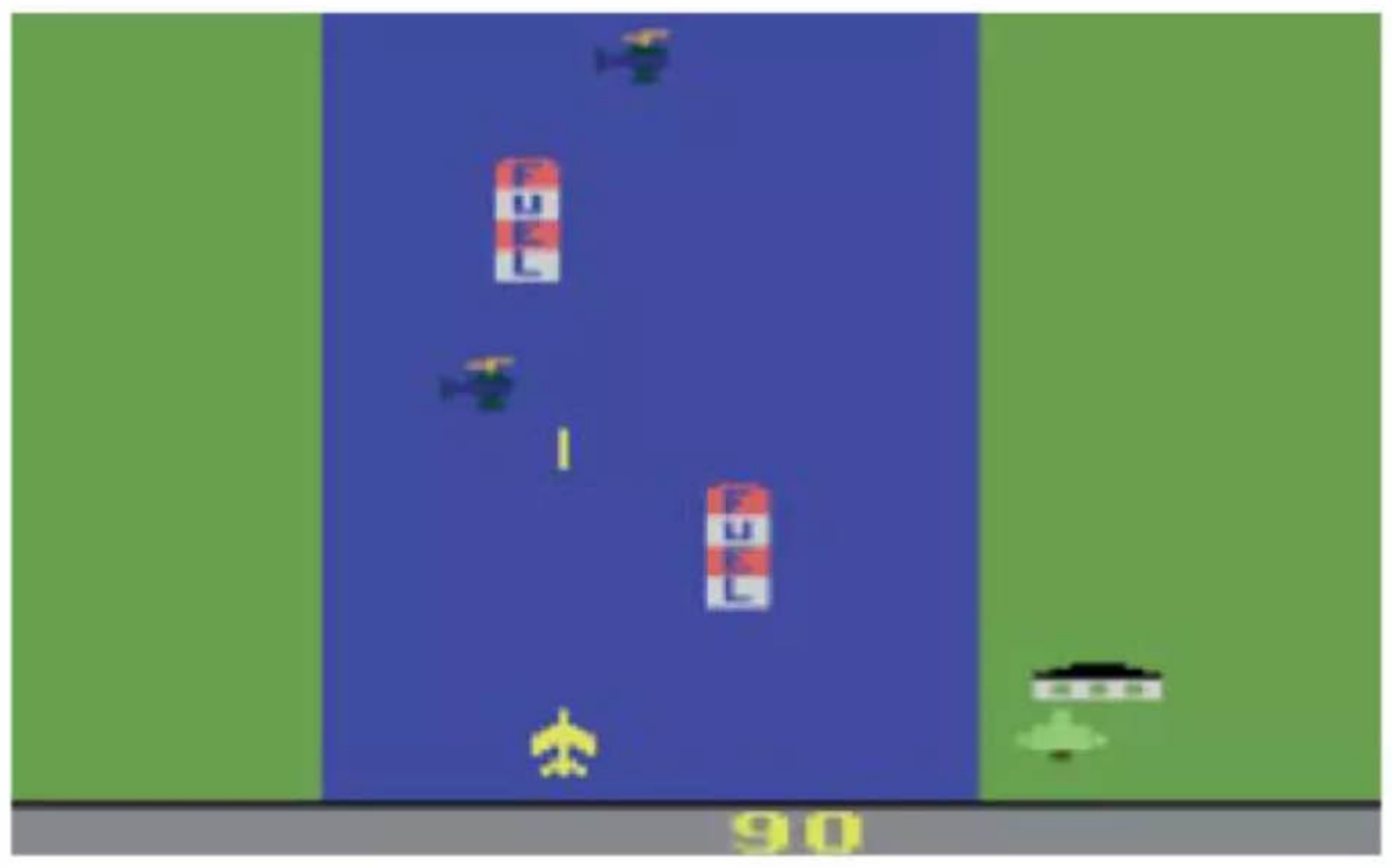
THE ATARI 2600 HAD AN INCREDIBLE AMOUNT OF GAMES AVAILABLE, COVERING ALL MANNER OF DIFFERENT GENRES. WITH THIS IN MIND WE'VE HAND-PICKED SOME OF ITS BEST TITLES FOR YOU. MISS THESE AT YOUR PERIL…

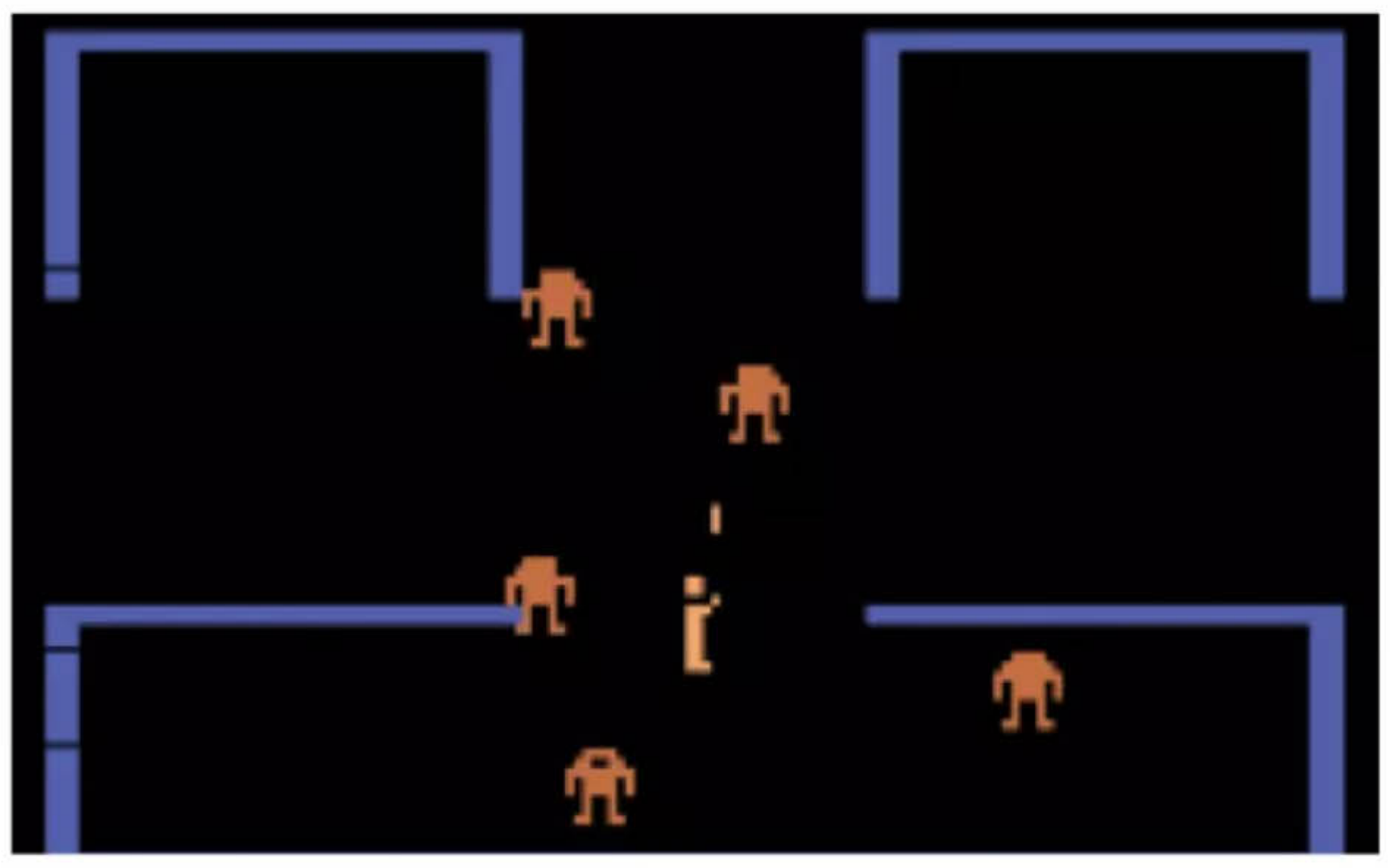


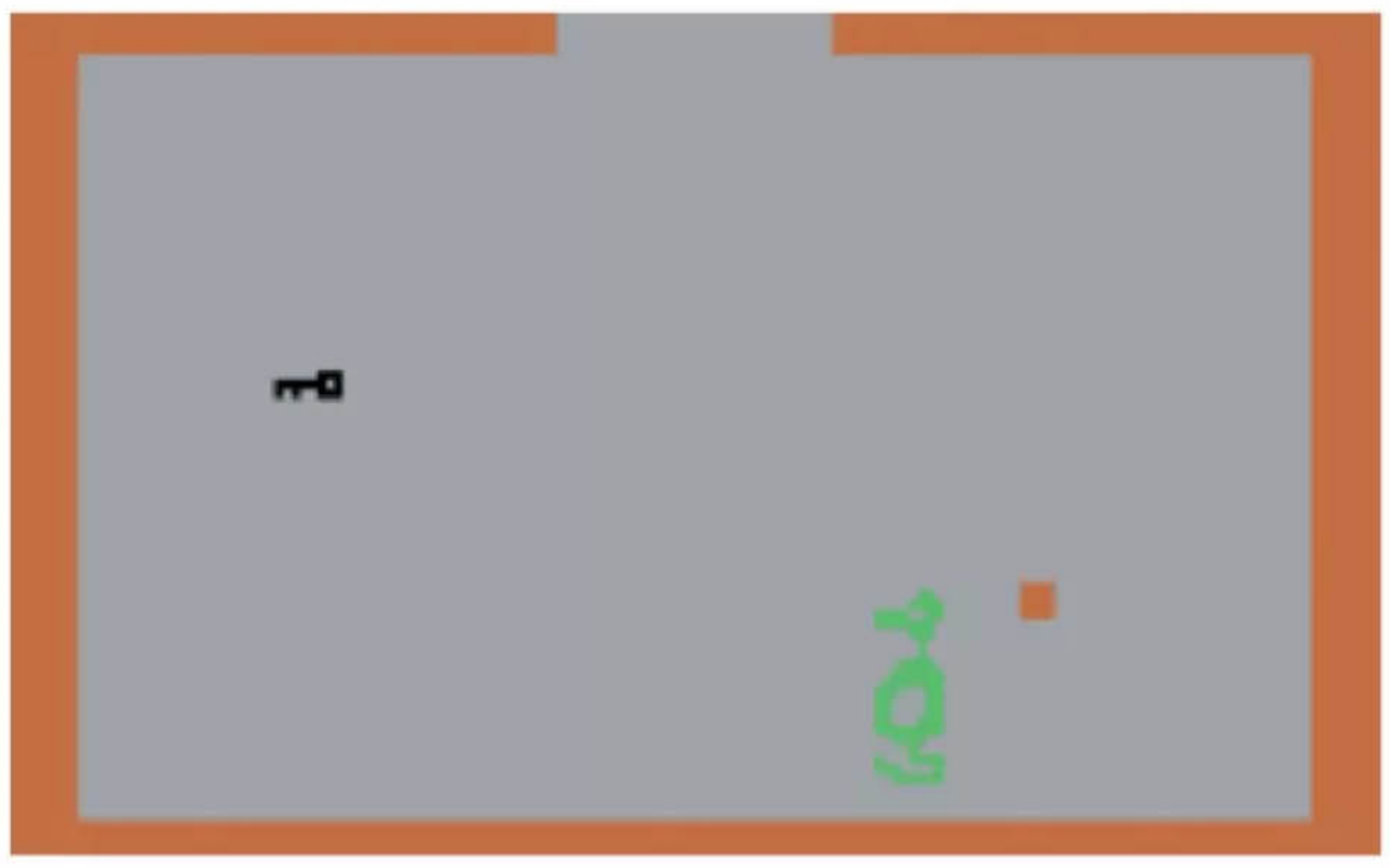
SPACE INVADERS

» RELEASED: 1980 » PUBLISHED BY: ATARI
» CREATED BY: RICK MAURERER

1 Don't be fooled by the ancient-looking visuals, *Space Invaders* was one of the earliest killer apps and proved a massive hit when it was first released on Atari's console. It may not be arcade perfect (there were only 36 onscreen invaders compared to the arcade's 55), but *Space Invaders* had plenty of different options, 112 in fact, which was a staggering amount at the time and greatly enhanced what was already a great game. Moving shields, zig-zagging bombs, invisible invaders, two players onscreen at once, guided missiles; the list was virtually endless, and it gave the game an endless amount of replay value. If you don't have a copy of *Space Invaders* in your collection then you're doing your Atari 2600 a huge disservice.







RIVER RAID

» RELEASED: 1982 » PUBLISHED BY: ACTIVISION
» CREATED BY: CAROL SHAW

2 *River Raid* was a huge departure for Carol Shaw; especially when you consider that the majority of her previous VCS games had been based on simple parlour games that didn't test the system.

The never-ending river you flew up was filled with a variety of dangerous hazards and the further you made it up the river, the more dangerous the challenge became (we didn't mind though, it looked amazing). Not only were you up against dangerous opponents, you also had a limited amount of fuel to worry about, which became scarcer and scarcer and the game progressed. A classic shooter that remains great fun to play.

BERSERK

» RELEASED: 1982 » PUBLISHED BY: ATARI
» CREATED BY: DAN HITCHINS

3 Like many 2600 arcade conversions, *Berzerk* wasn't perfect. For starters, the voice synthesis from the arcade game was nowhere to be seen (although this was later added in an enhanced version), the graphics gave the game a more claustrophobic feel than its arcade parent and the enemies couldn't fire diagonally, thus making it easier to play. Despite these niggles it remains a great conversion mainly because of its simplistic gameplay and solid controls. Negotiating the mazes took steady nerves and a fair amount of patience and strategy. If you're a fan of shooters, track this down as quickly as possible.

ADVENTURE

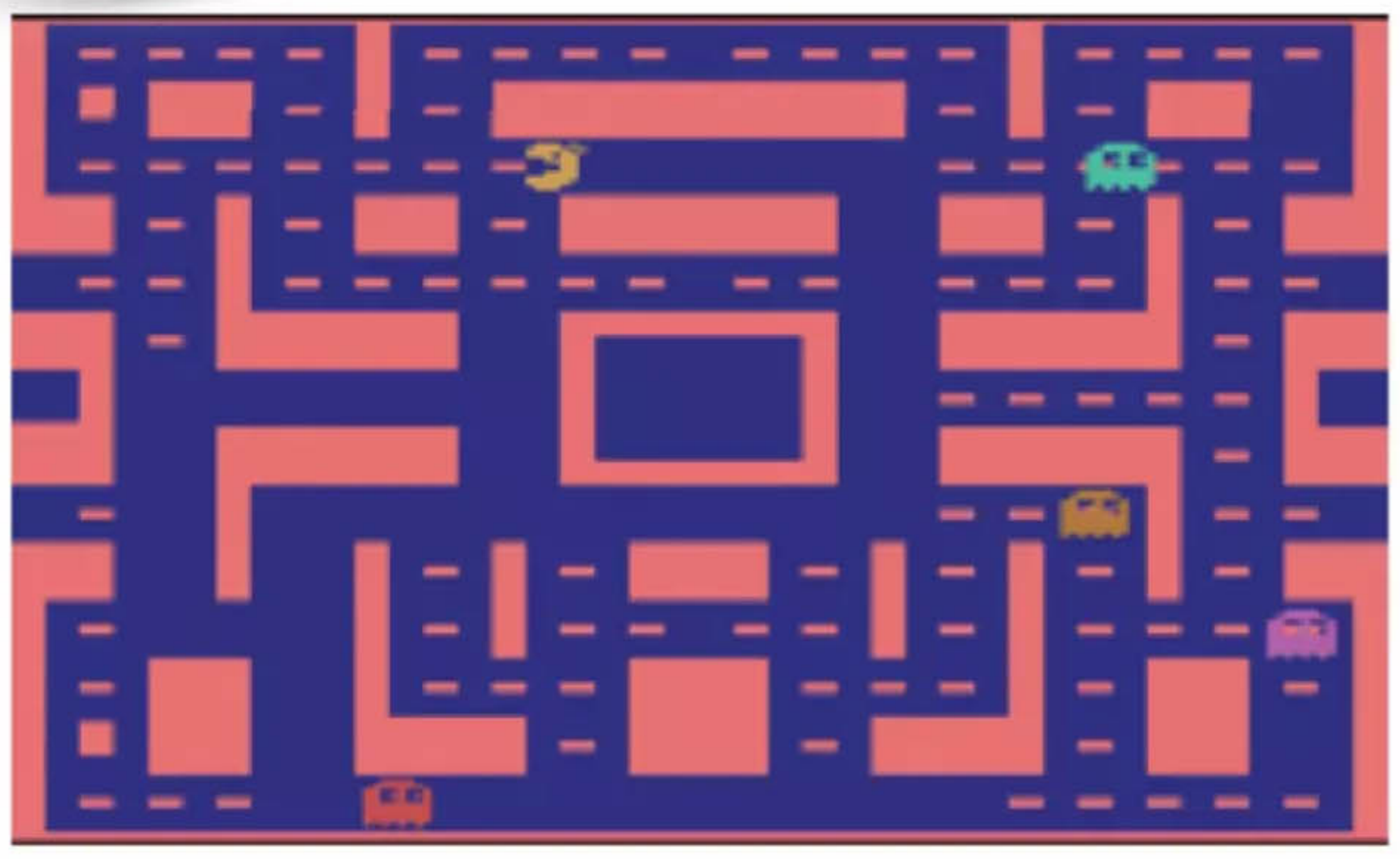
» RELEASED: 1980 » PUBLISHED BY: ATARI
» CREATED BY: WARREN ROBINETT

4 *Adventure* is perhaps one of the crudest-looking games on the 2600. Your lead character was nothing more than a simple block, many of the rooms were sparse, even by VCS standards, and the less said about the dragons the better…

Nevertheless, it was one of the most involving titles available for Atari's first home console. With its simple premise (return a stolen chalice to a castle) and some great gameplay mechanics – several items can be picked up along the way to help your progress – *Adventure* remains a landmark title and an essential addition to any VCS library.

"ACTIVISION CERTAINLY CHURNED OUT SOME QUALITY TITLES FOR THE ATARI 2600 AND H.E.R.O. WAS NO EXCEPTION"

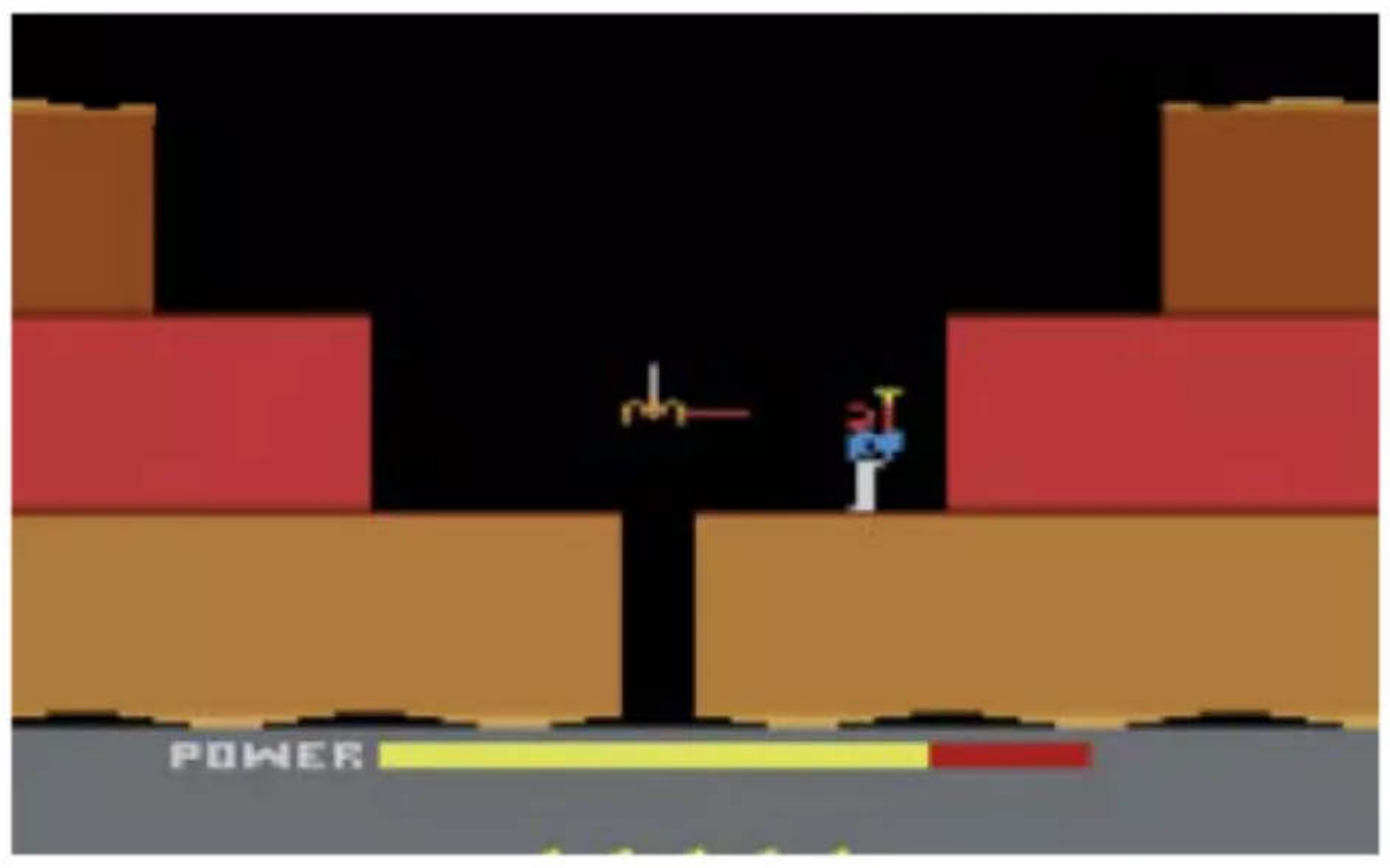
MAKE SURE YOU PLAY JOHN VAN RYZIN'S GAME



MS PAC-MAN

» RELEASED: 1982 » PUBLISHED BY: ATARI
» CREATED BY: MIKE HOROWITZ, JOSH LITTLEFIELD

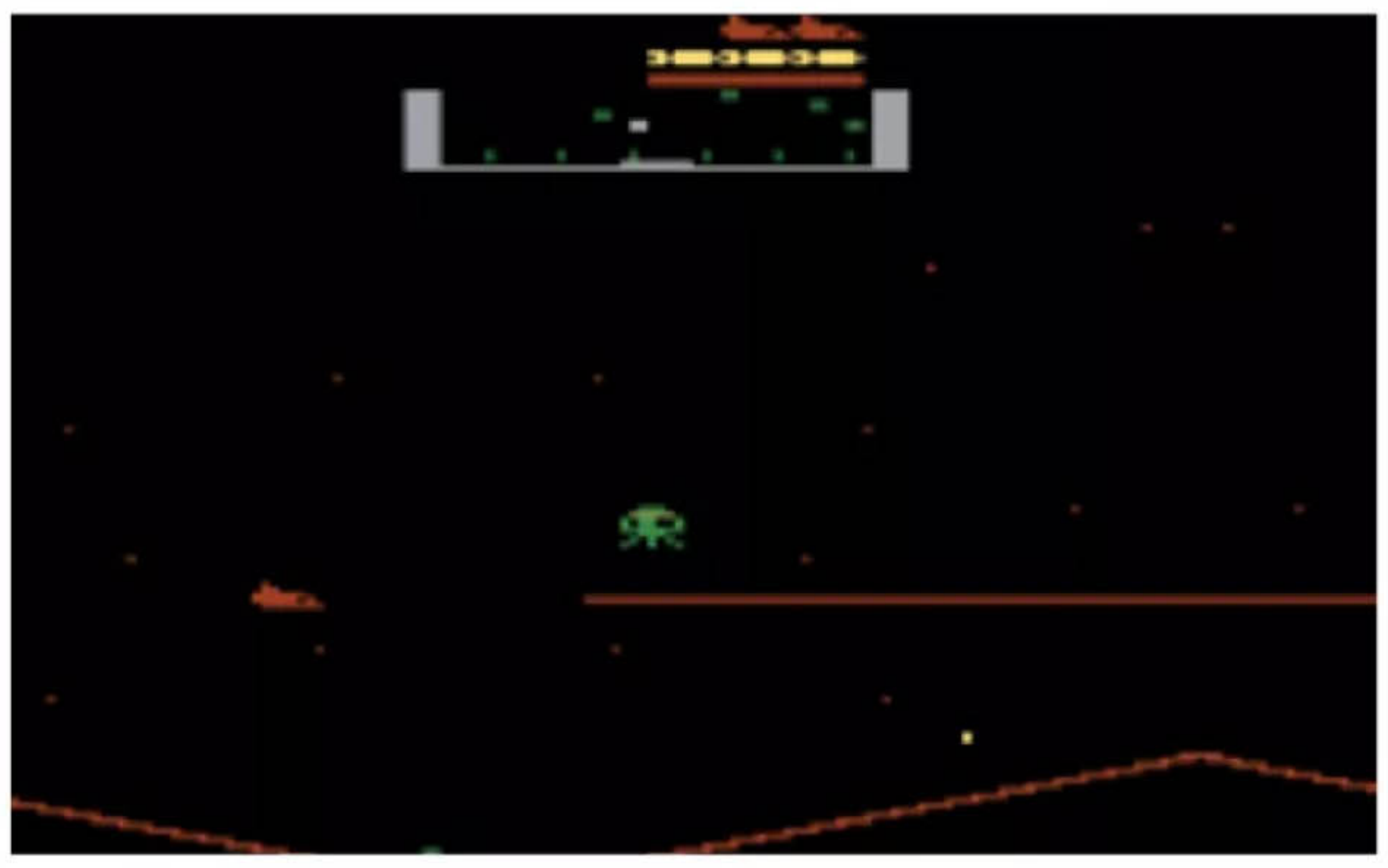
5 Even the most avid 2600 owner will tell you that Atari's original *Pac-Man* was an appalling conversion. The game had obviously been rushed and disgruntled gamers poured scorn upon Atari. Atari had obviously been listening, though, as *Ms Pac-Man* was a huge improvement. While the visuals weren't arcade perfect, they captured the spirit of the original, and, this time around the main character actually looked like her arcade counterpart. Add in spot-on controls, faithful sound effects and near perfect gameplay that faithfully mimicked the arcade game and *Ms Pac-Man's* success was assured.



H.E.R.O.

» RELEASED: 1984 » PUBLISHED BY: ACTIVISION
» CREATED BY: JOHN VAN RYZIN

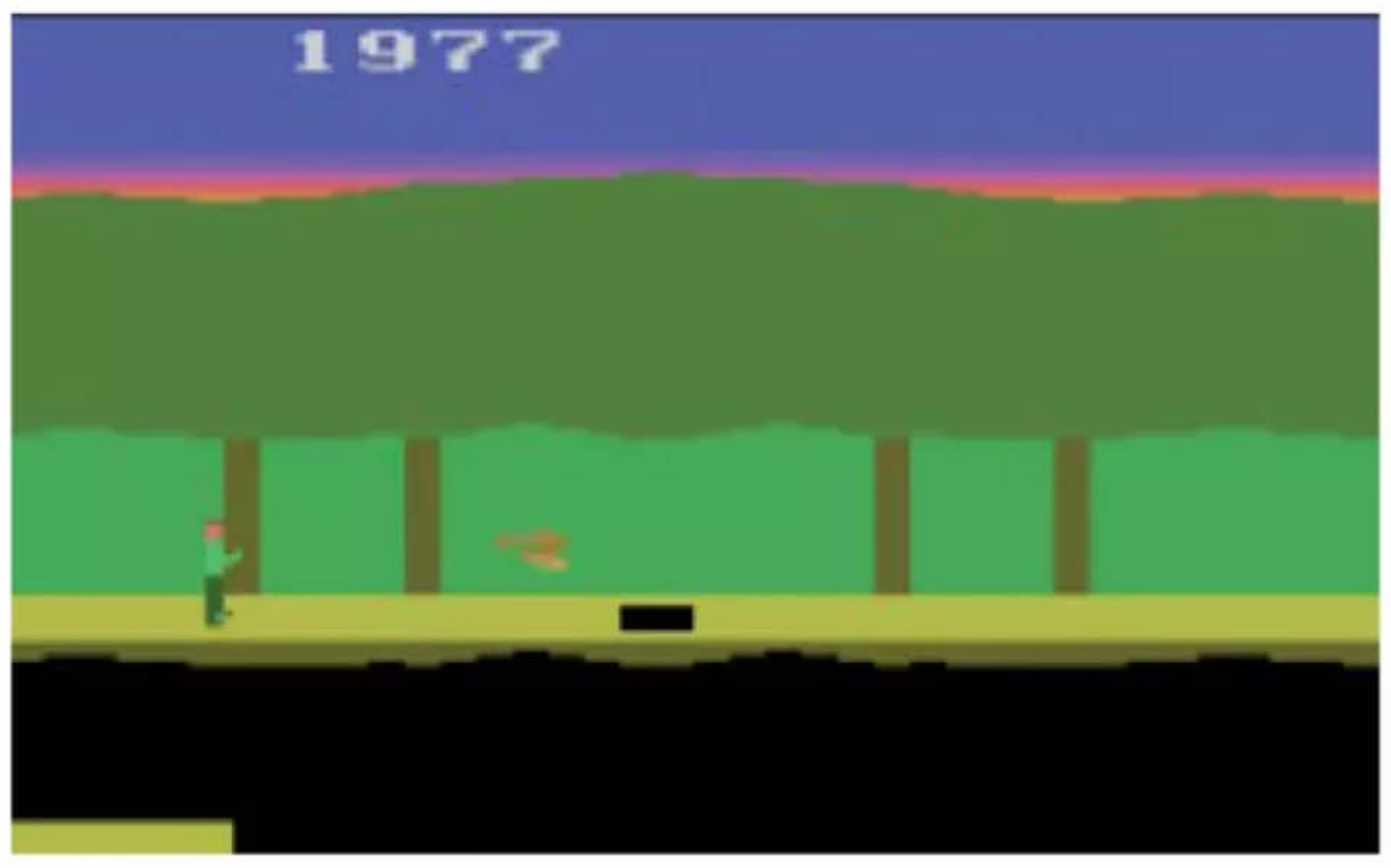
6 Activision certainly churned out some quality titles for the Atari 2600 and *H.E.R.O.* was no exception. Taking control of Roderick Hero, the aim was to use your propeller backpack to venture into the 20 dangerous mines and rescue all the miners. *H.E.R.O.* was typical of many Activision titles in that it was very polished and featured some solid gameplay. While there was no actual music to speak of, there's a wealth of impressive effects that really added to the game's atmosphere and the ever-decreasing power in Roderick's jetpack ensured that every game remained a tense challenge. Great stuff.



DEFENDER II

» RELEASED: 1982 » PUBLISHED BY: ATARI
» CREATED BY: BILL ASPROMONTE

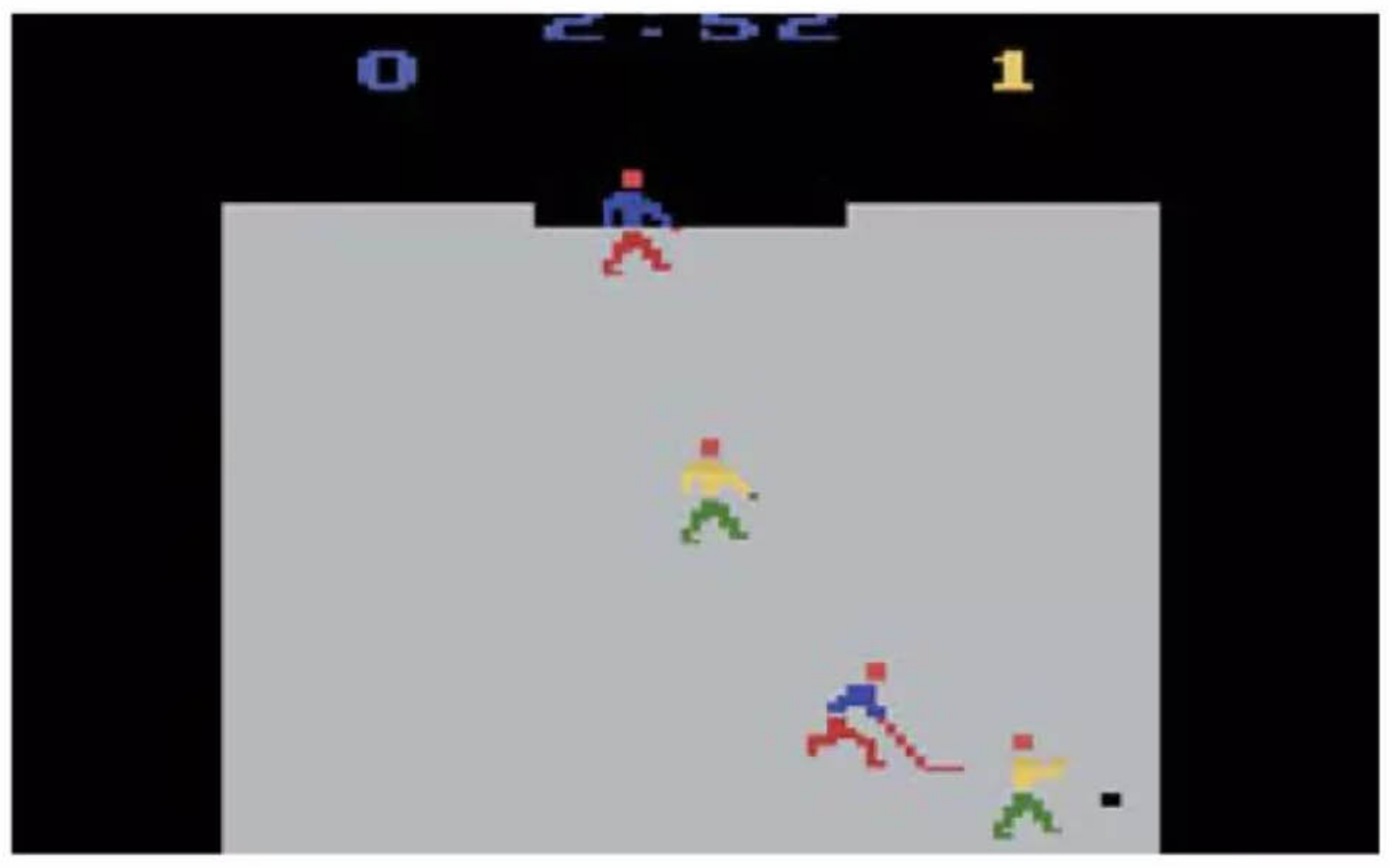
7 *Defender II* (or *Stargate* as it is also known) is another great arcade conversion for the 2600 and a damn fine shooter to boot. Unlike the original *Defender* (which was a pretty poor conversion) its sequel got everything correct and featured visuals that were extremely reminiscent of Eugene Jarvis's arcade hit. The action was fast and furious, sprite flickering was kept to a bare minimum and there were plenty of meaty sound effects to enjoy as you blasted away at alien sumc. When you consider that none of the original controls were sacrificed, you have yet another cracking title that certainly deserves a special place in your collection.



PITFALL II: LOST CAVERNS

» RELEASED: 1984 » PUBLISHED BY: ACTIVISION
» CREATED BY: DAVID CRANE

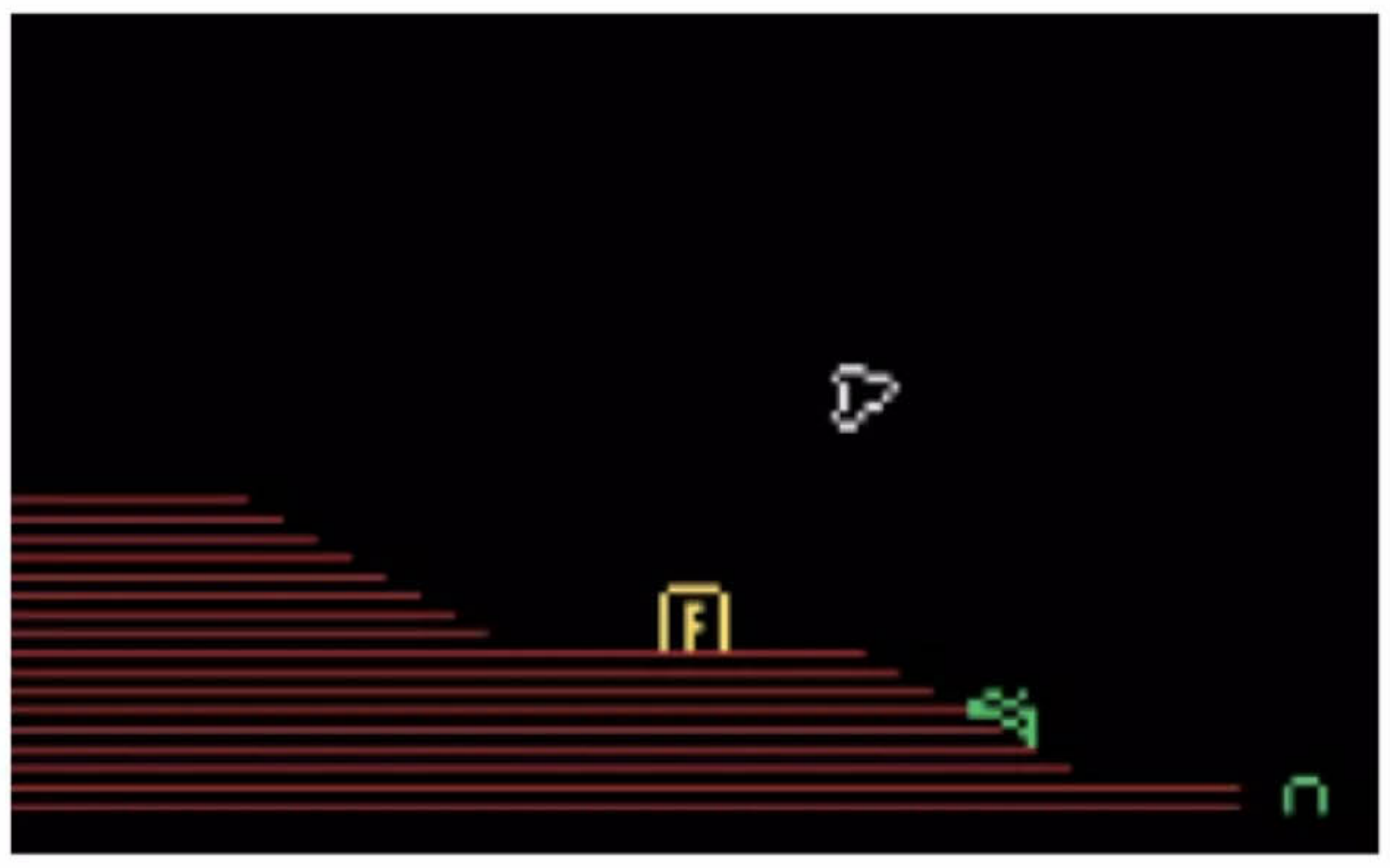
8 While the original *Pitfall!* is still a fantastic game, we constantly find ourselves returning to its superior sequel whenever we fancy participating in some jungle antics. Thanks to the cartridge containing its own chipset, the visuals in *Pitfall II* were very advanced for their time and were complemented by an extremely impressive soundtrack – indeed, technically *Pitfall II* remains one of the best-looking and sounding games that we've ever played on Atari's console. If you're looking for a tense platformer that constantly challenges you then *Pitfall II* should be tracked down at all costs. One of David Crane's finest moments.



ICE HOCKEY

» RELEASED: 1981 » PUBLISHED BY: ACTIVISION
» CREATED BY: ALAN MILLER

9 There were plenty of sports titles available on the Atari VCS, but few came close to the greatness of Alan Miller's excellent *Ice Hockey*. It's only two-on-two, and the graphics were rather simplistic to say the least, but none of that matters in the slightest as the all-important gameplay more than delivered. You had a surprising amount of control over both your players, the action was fast and furious and, once you got the hang of it, you could pull off shots from a variety of different angles. It was even possible to check opponents and send them crashing to the floor if you couldn't regain control of the puck. Another great Activision release.



THRUST

» RELEASED: 2000 » PUBLISHED BY: XTYPE
» CREATED BY: THOMAS JENTZSCH

10 There's an amazing array of home-brew titles currently available for the 2600, but Thomas Jentzsch's *Thrust* remains one of our favourites and shows off just what Atari's console can be capable of in the right hands. It was a great conversion of the original Commodore 64 classic and featured some very impressive visuals and a real sense of inertia that made it a joy to play. There was some fantastically smooth scrolling on display and the controls themselves were superb, meaning that you'd never blame them when you inevitably crashed into the desolate landscape. A smashing adaptation of an 8-bit classic.

video computer system
ATARI

ATARI 2600
AND THE REST...

Considering the massive popularity of Atari's first home console, it's perhaps unsurprising that it features such a diverse range of great (and downright awful) games. Here's just a selection of them…

01 Miniature Golf
02 River Raid
03 Earth Dies Screaming
04 Ghost Manor
05 Popeye
06 Moon Patrol
07 Texas Chainsaw Massacre
08 Zaxxon
09 Double Dragon
10 Beamrider
11 Haunted House
12 River Patrol
13 Gravitar
14 Asteroids
15 Mega Force
16 Rampage
17 Tapper
18 Amidar
19 Custer's Revenge
20 Gremlins
21 Marauder
22 Pitfall II: Lost Caverns
23 Pooyan
24 Stampede
25 Fantastic Voyage
26 Mario Bros
27 Phoenix
28 Snoopy and the Red Baron
29 Venture
30 Alien
31 Breakout
32 Frogger
33 Berzerk
34 Donkey Kong
35 Galaxian
36 Missile Command
37 Adventures of Tron
38 Combat
39 Joust
40 Pigs in Space
41 Radar Lock
42 Keystone Kapers
43 Space War
44 Pengo
45 Infiltrate
46 Mr. Do!
47 Coconuts
48 Demon Attack
49 Ms. Pac-Man
50 Kangaroo
51 Q*Bert
52 Sky Skipper
53 Halloween
54 Canyon Bomber
55 Gorf
56 Jungle Hunt
57 Frostbite
58 ET: The Extra-Terrestrial
59 Gyruss
60 Shark Attack
61 Outlaw
62 Star Wars: The Empire Strikes Back
63 H.E.R.O.
64 RealSports Soccer
65 Ghostbusters
66 Burger Time
67 Mouse Trap
68 Sinistar
69 Centipede
70 Pac-Man
71 Road Runner
72 Air Sea Battle
73 Frogs and Flies
74 RealSports Tennis
75 Star Wars: Jedi Arena
76 Pitfall
77 Karate
78 Lock 'N' Chase
79 Plaque Attack
80 Chuck Norris Superkicks
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82 Carnival
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84 Time Pilot
85 Bachelor Party
86 Track and Field
87 Forest

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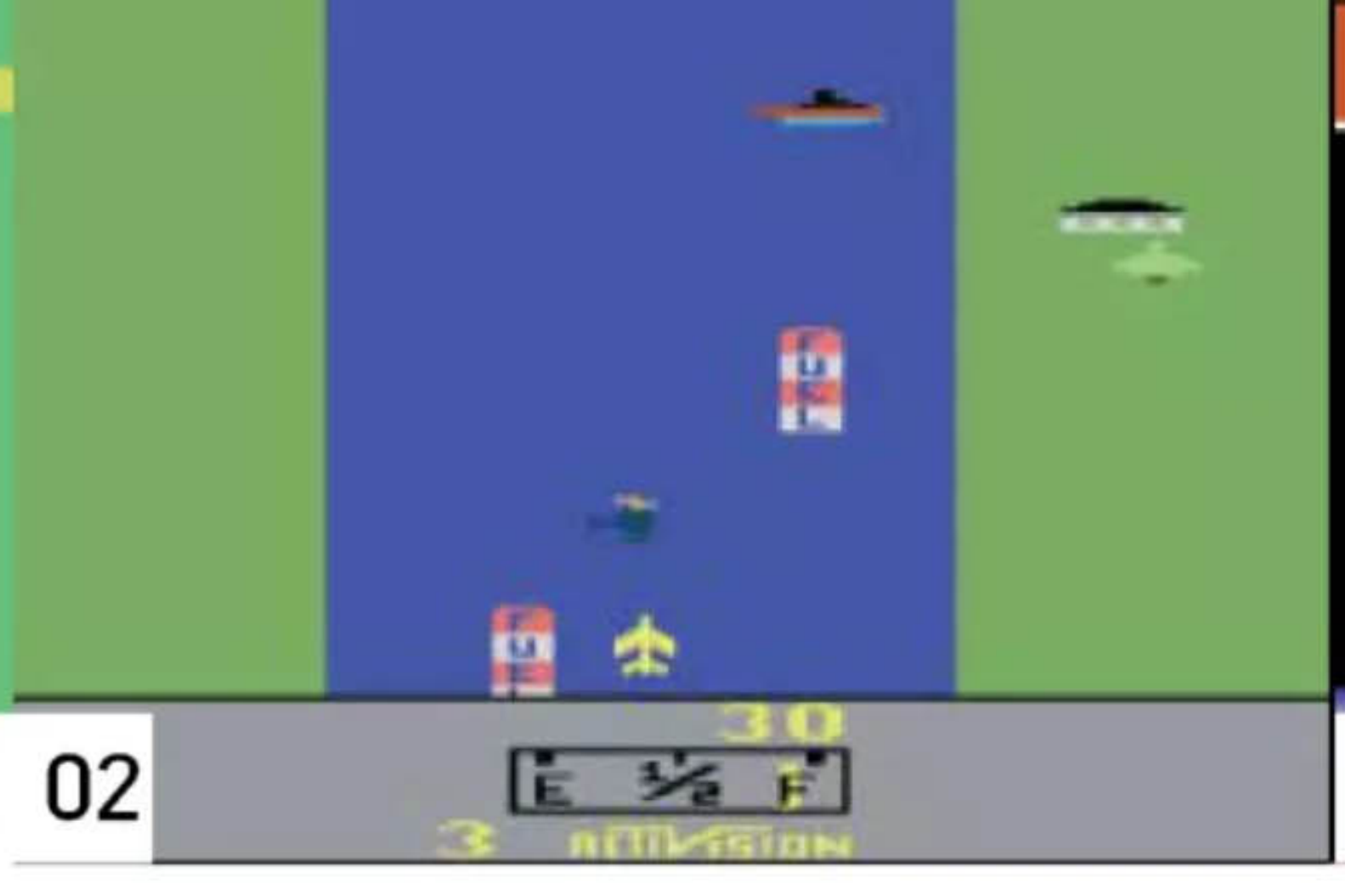
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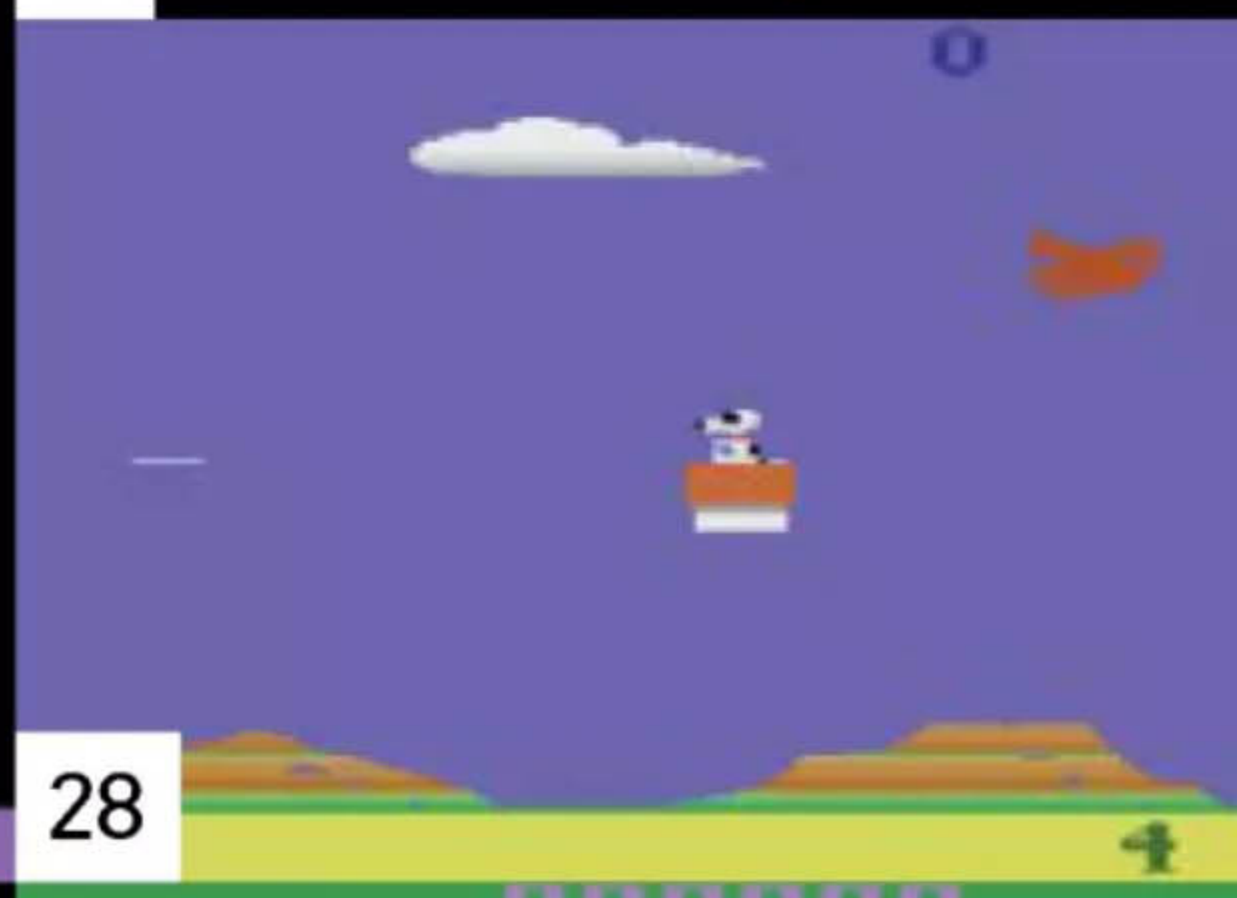
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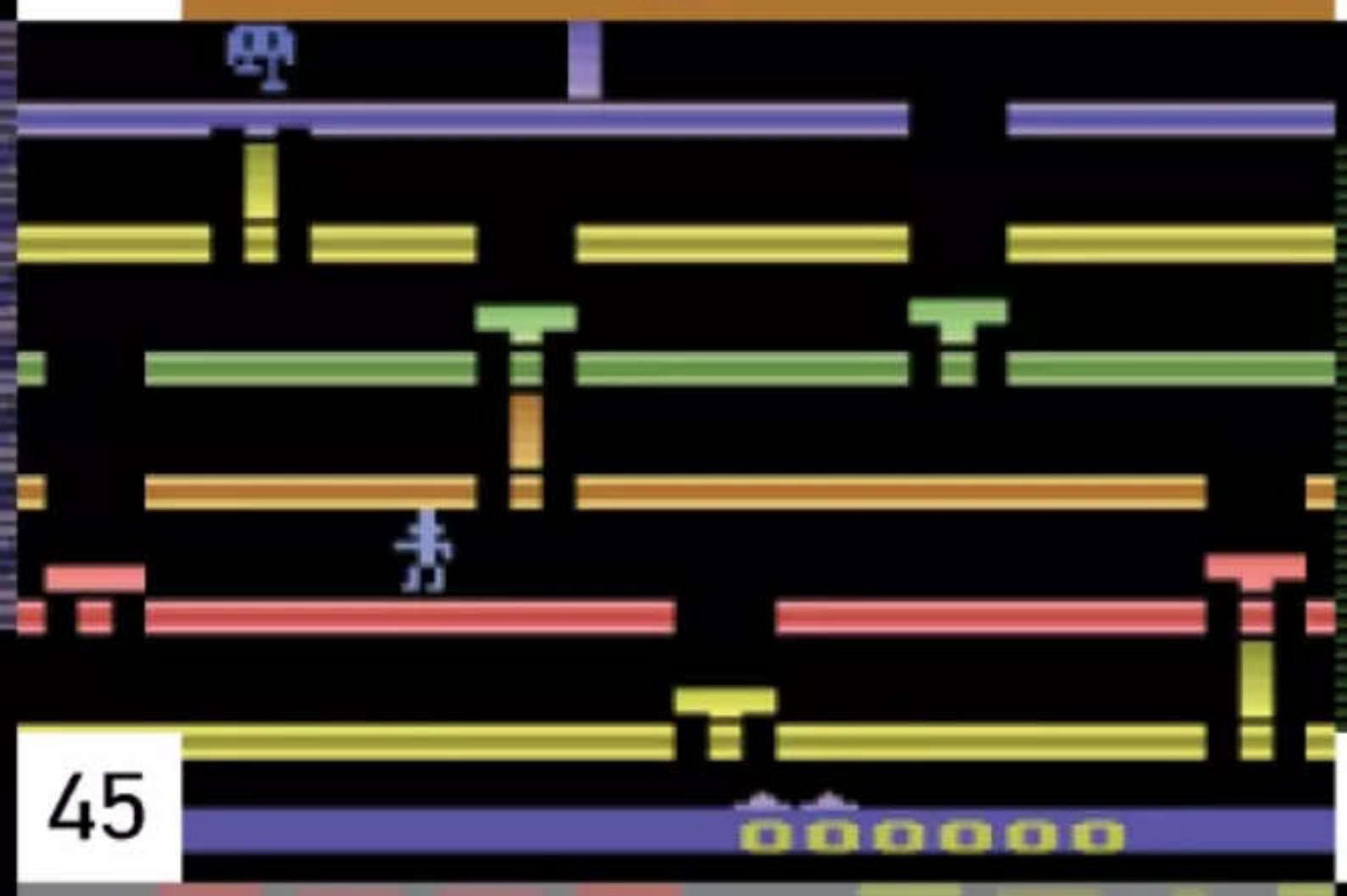
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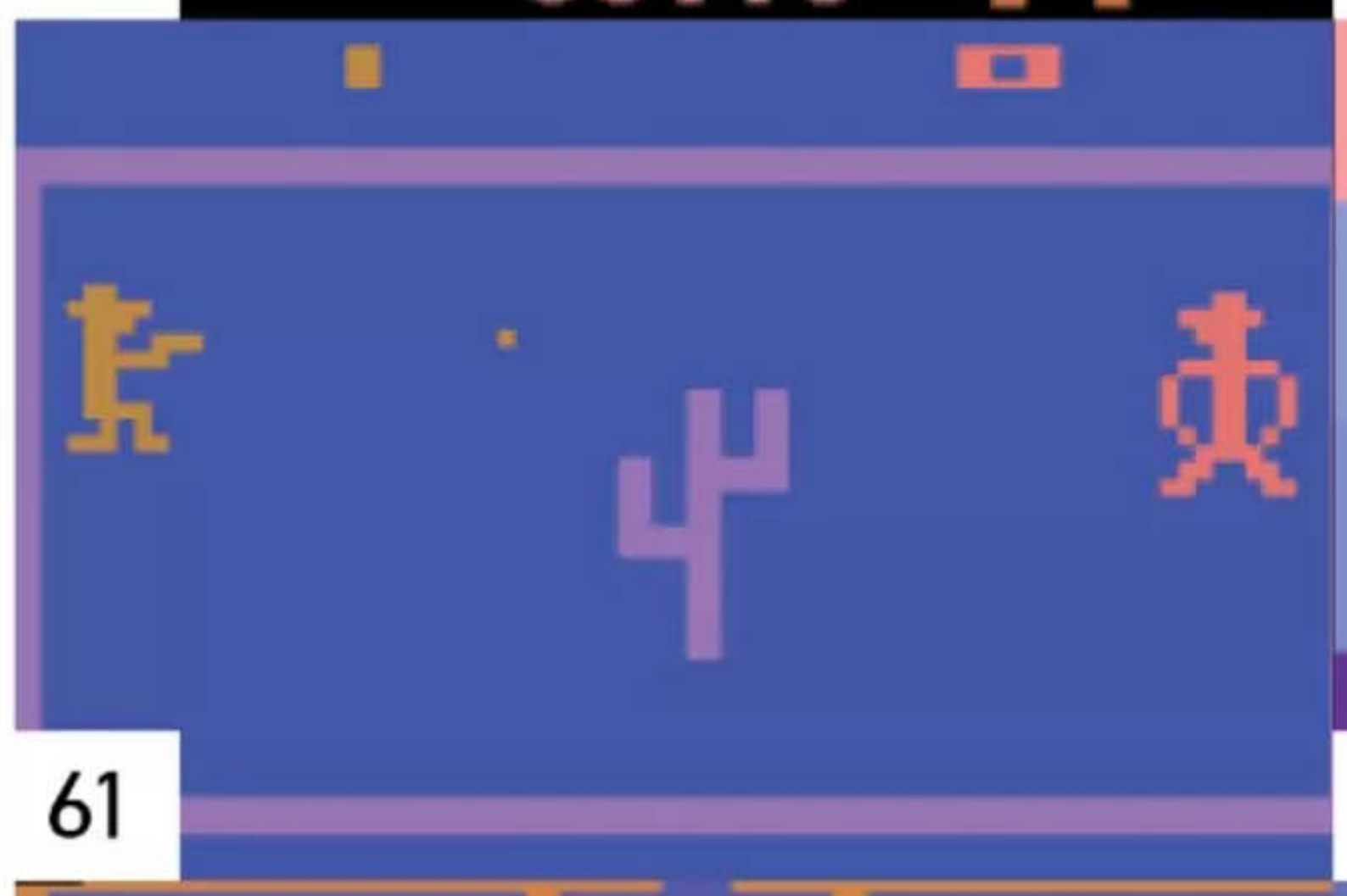
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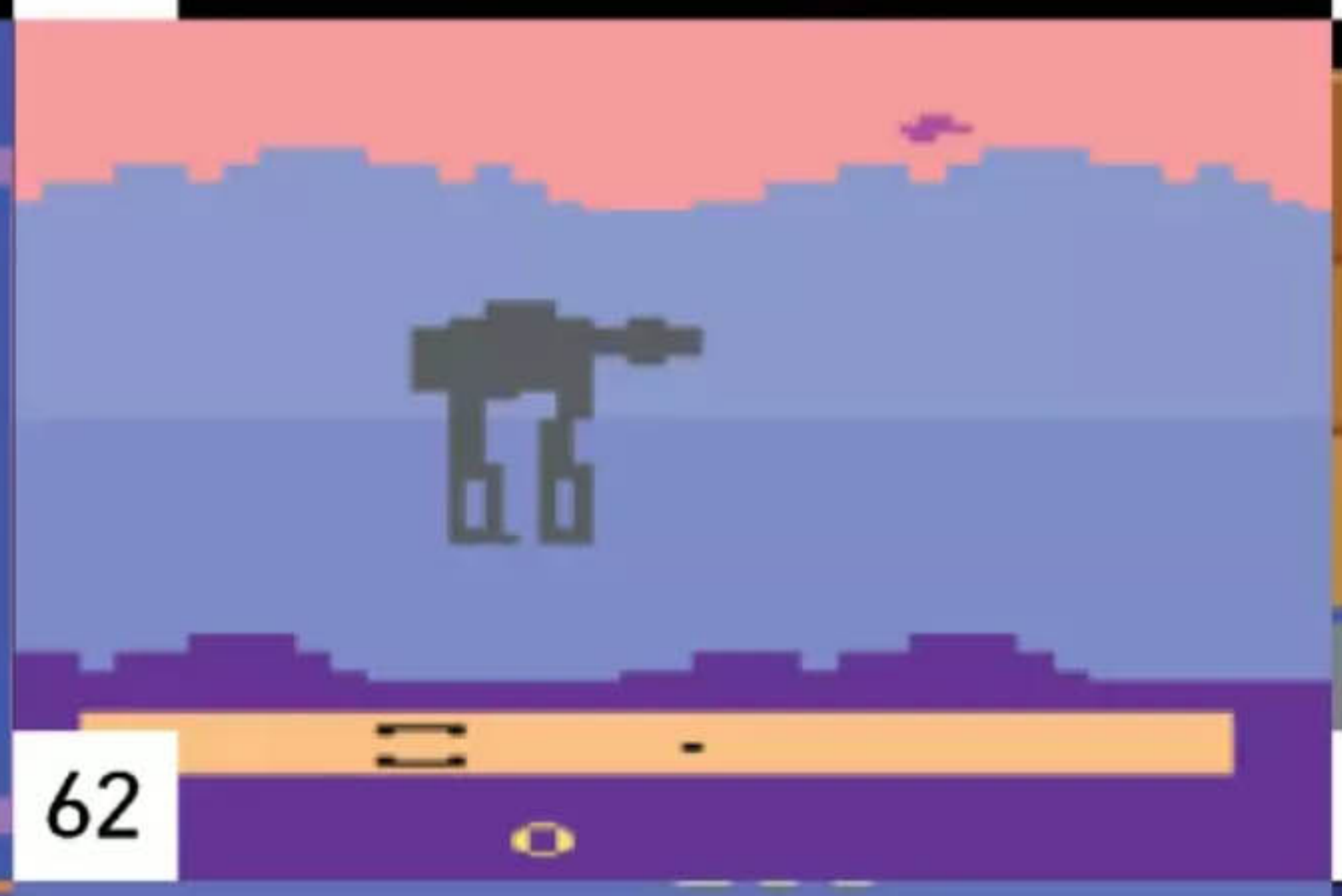
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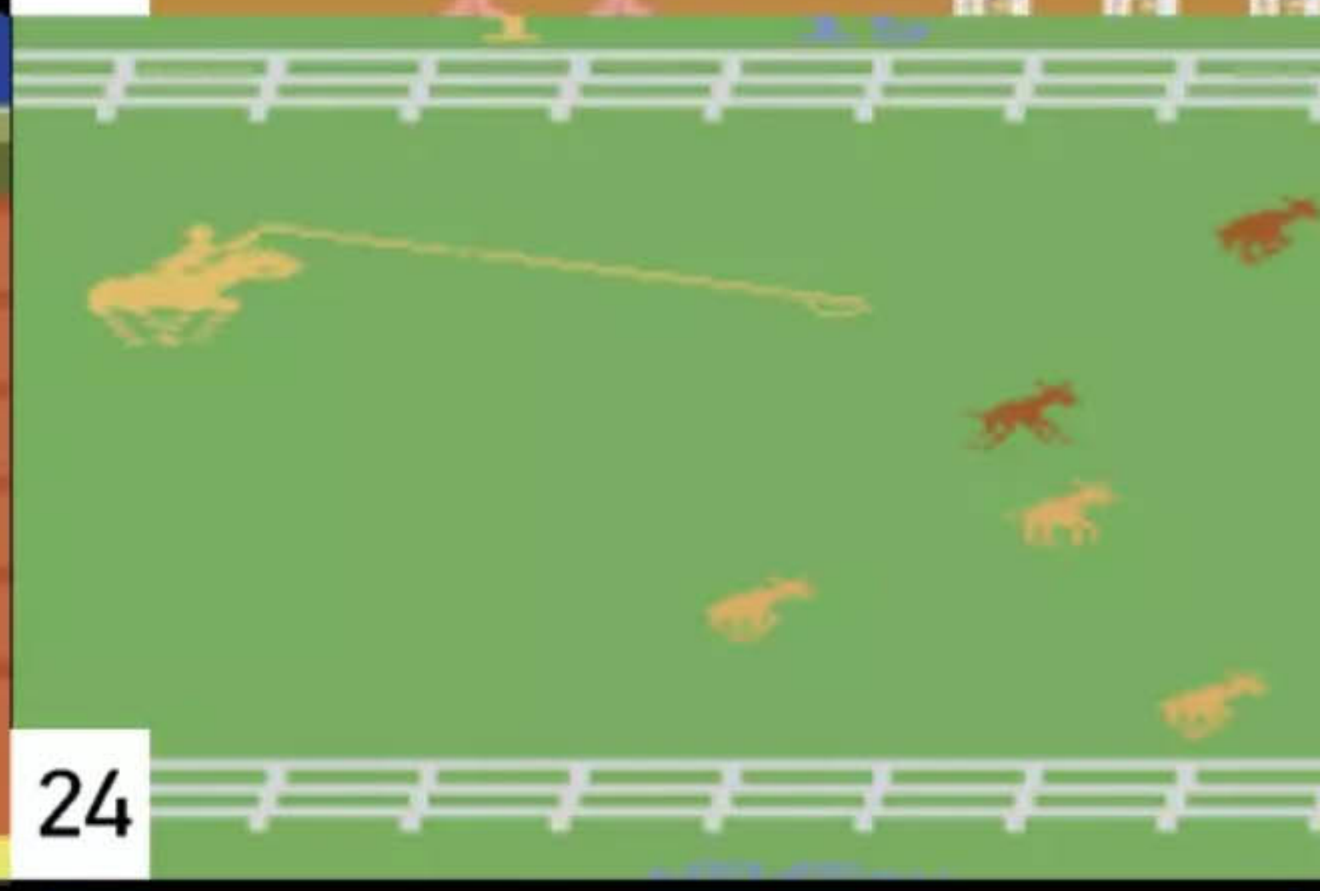
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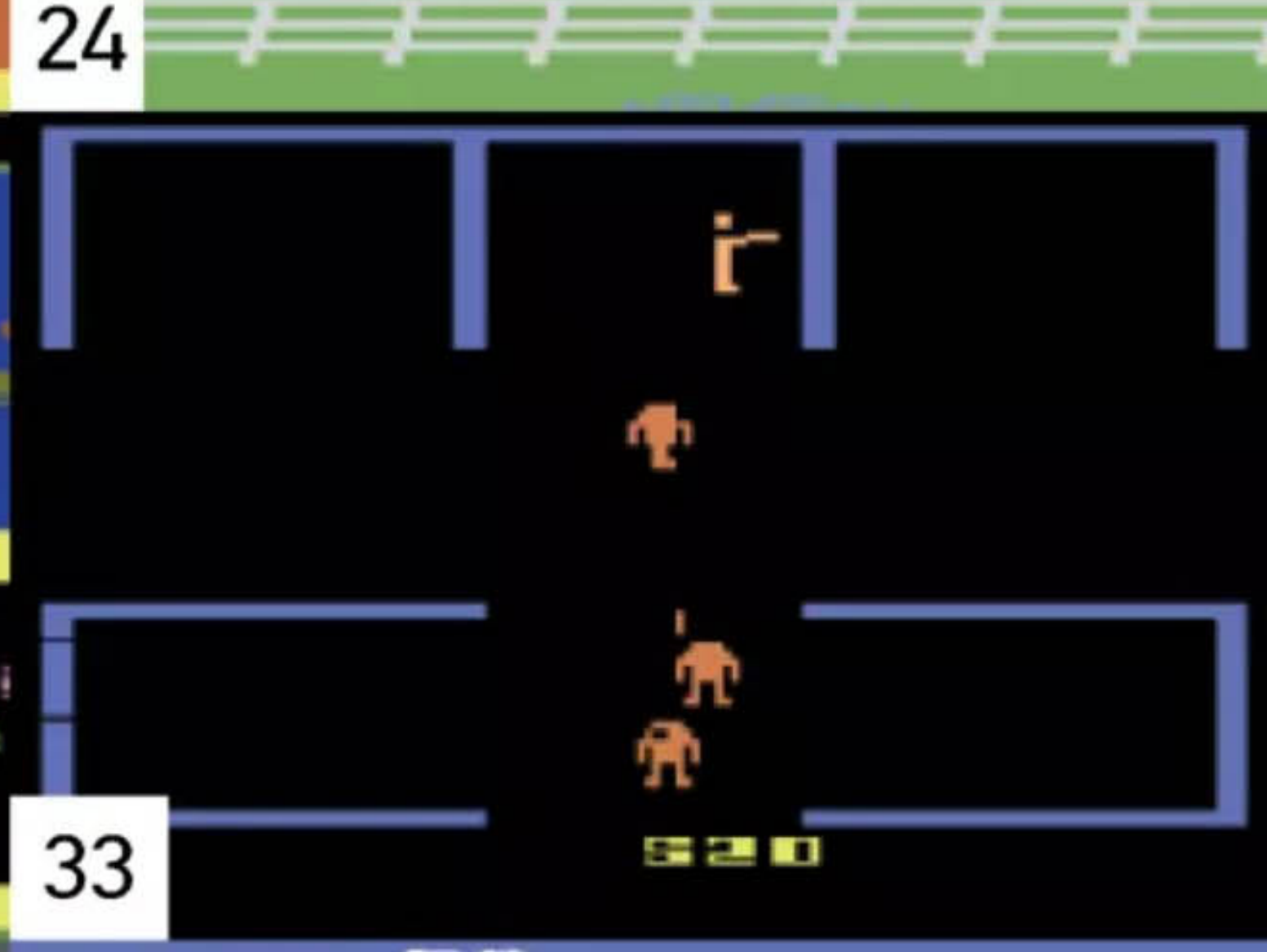
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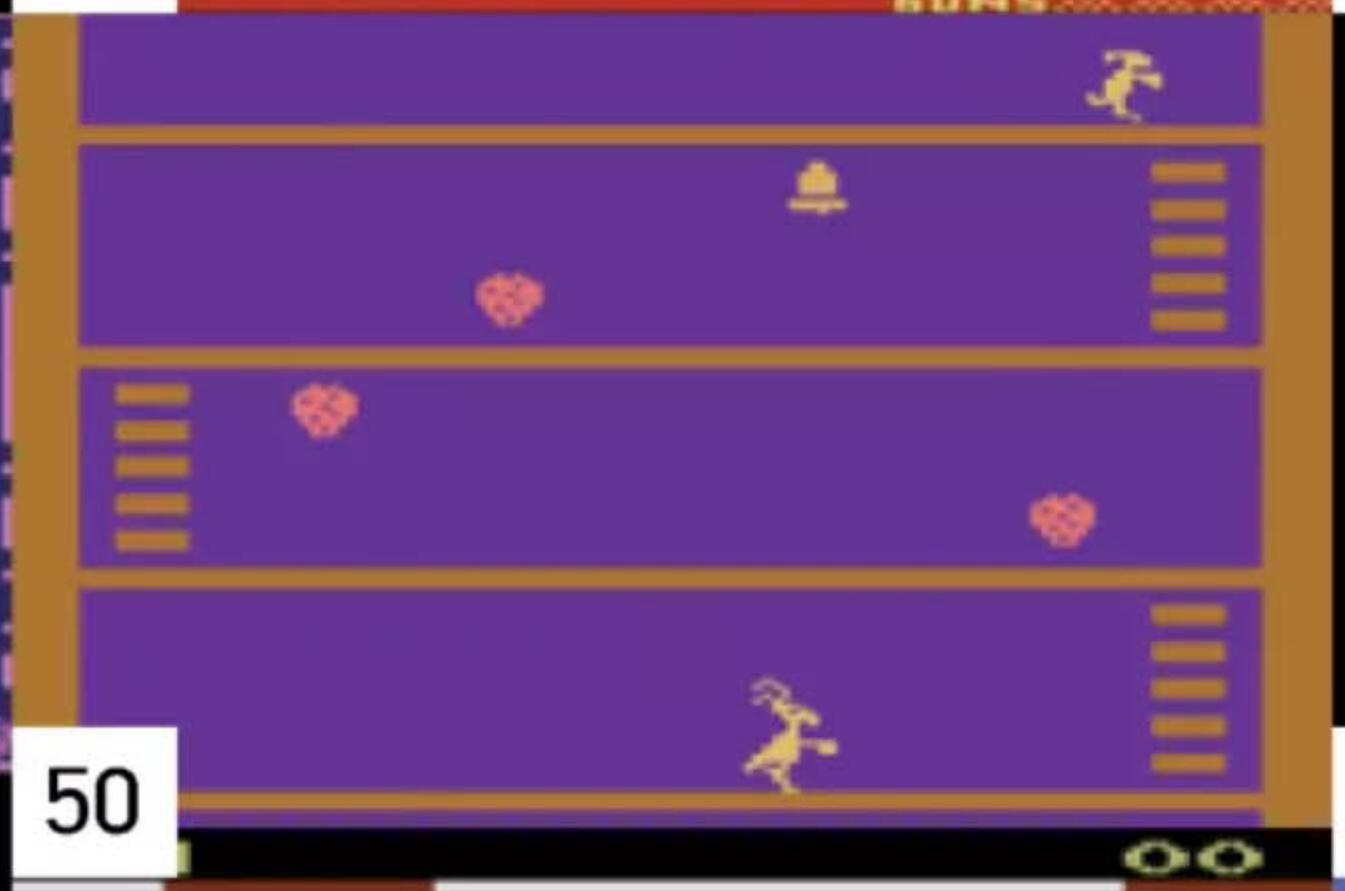
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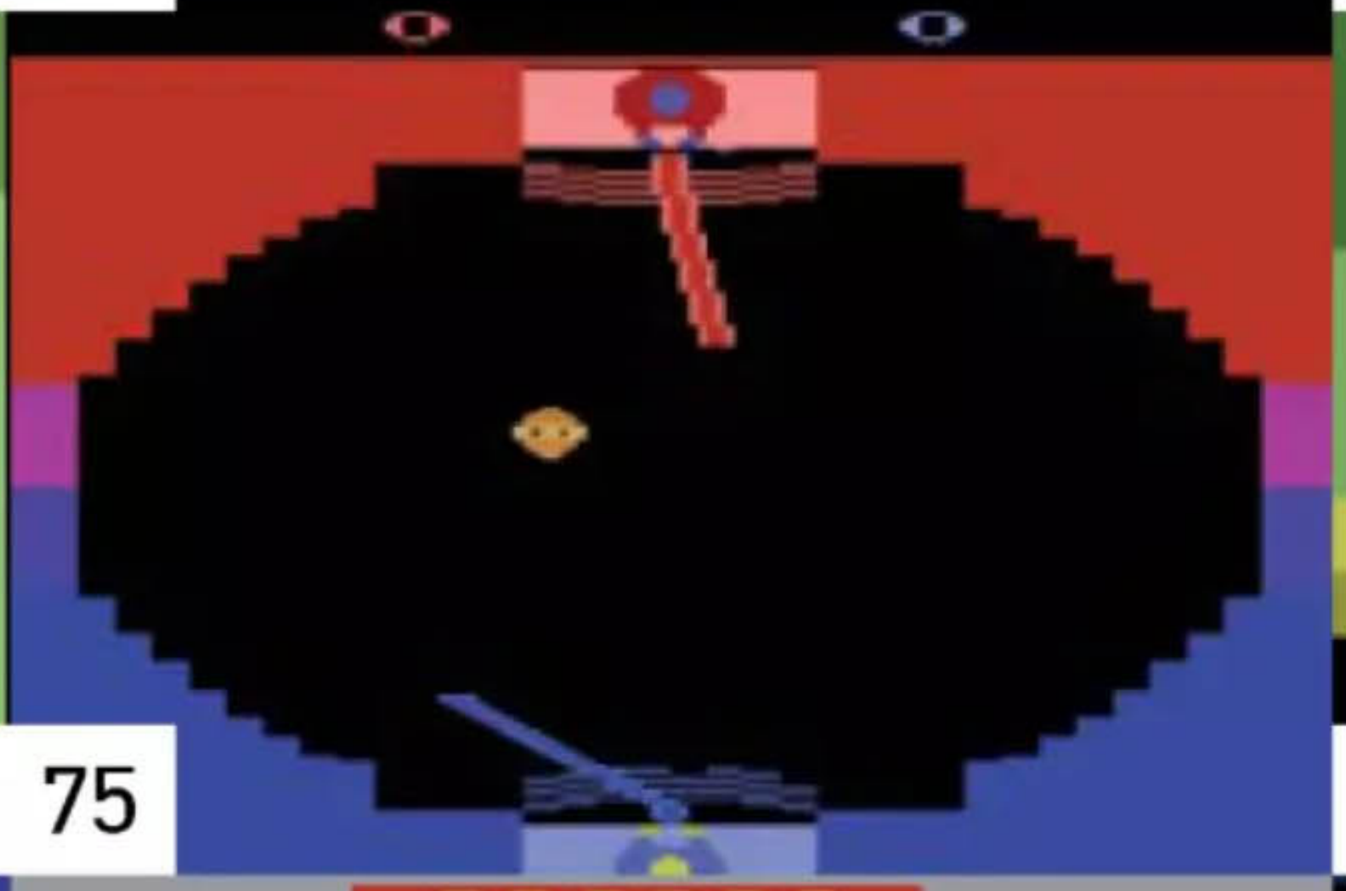
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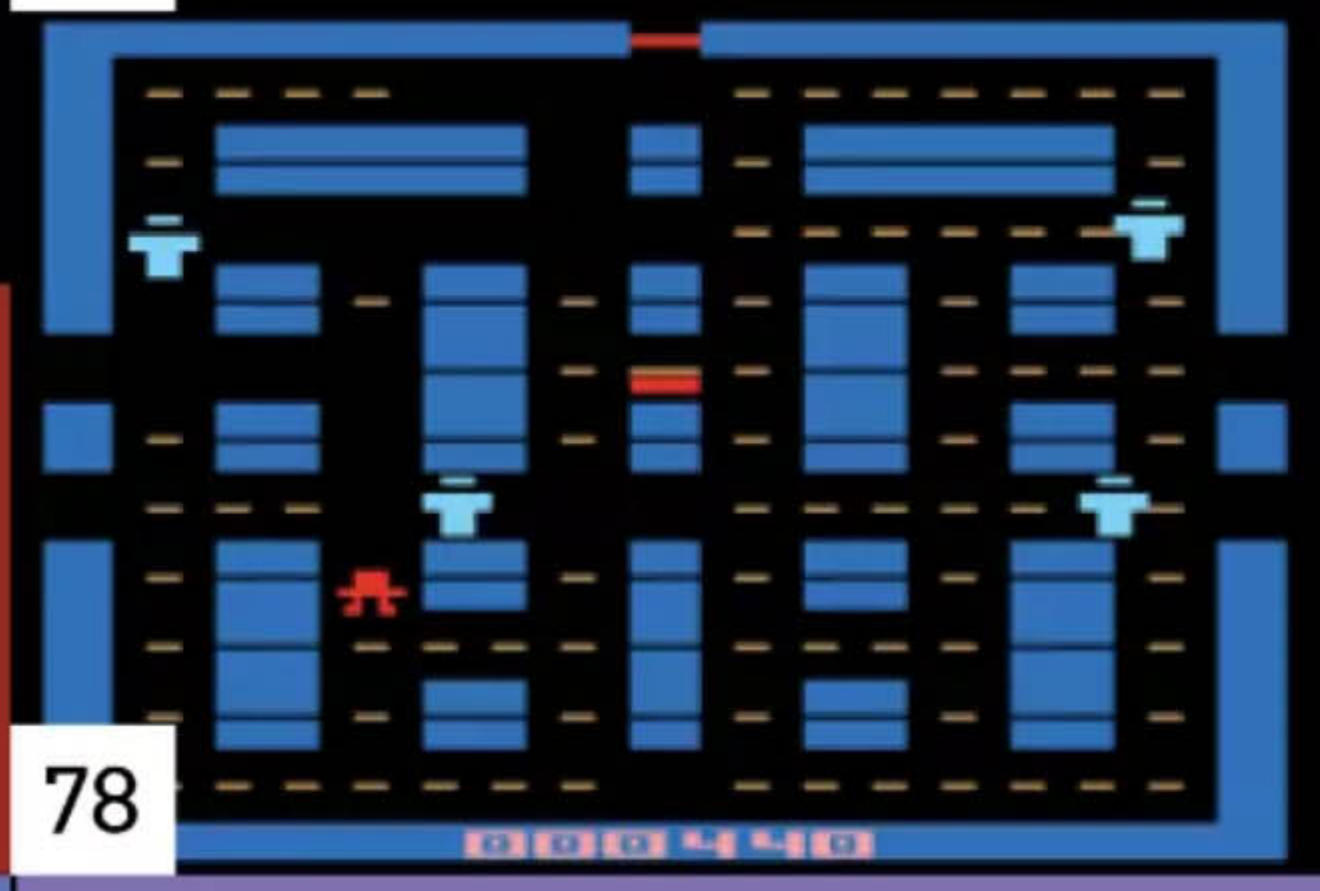
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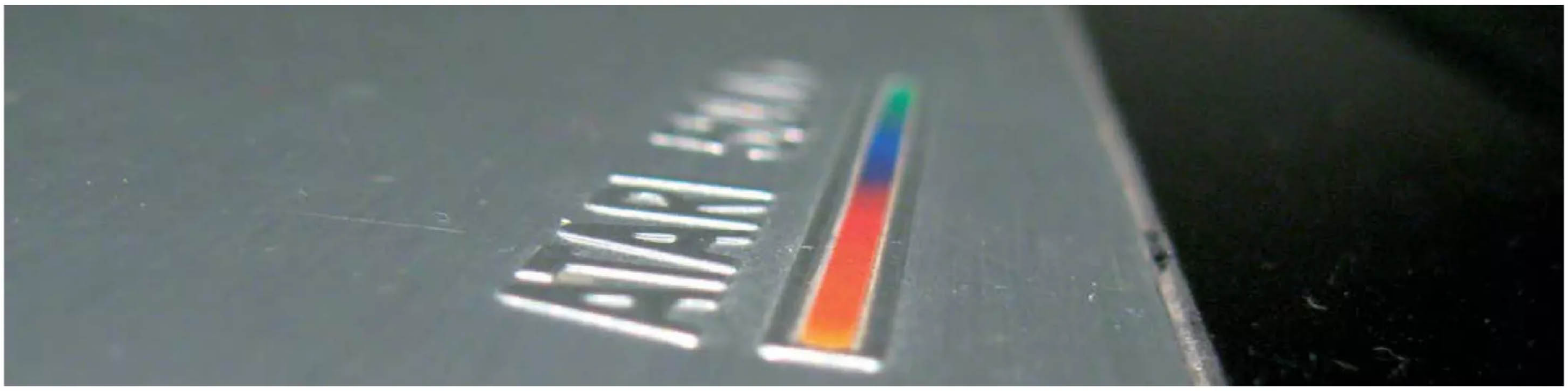


ATARI 5200

LAUNCHED IN 1982 AS ATARI'S HIGH-END SYSTEM TO BRING THE FULL ARCADE EXPERIENCE TO THE HOME, THE 5200 INSTEAD TURNED INTO ATARI'S TWO-YEAR DETOUR THAT PAVED THE WAY TO THE RELEASE OF THE 7800

DATAFILE

YEAR RELEASED: 1982

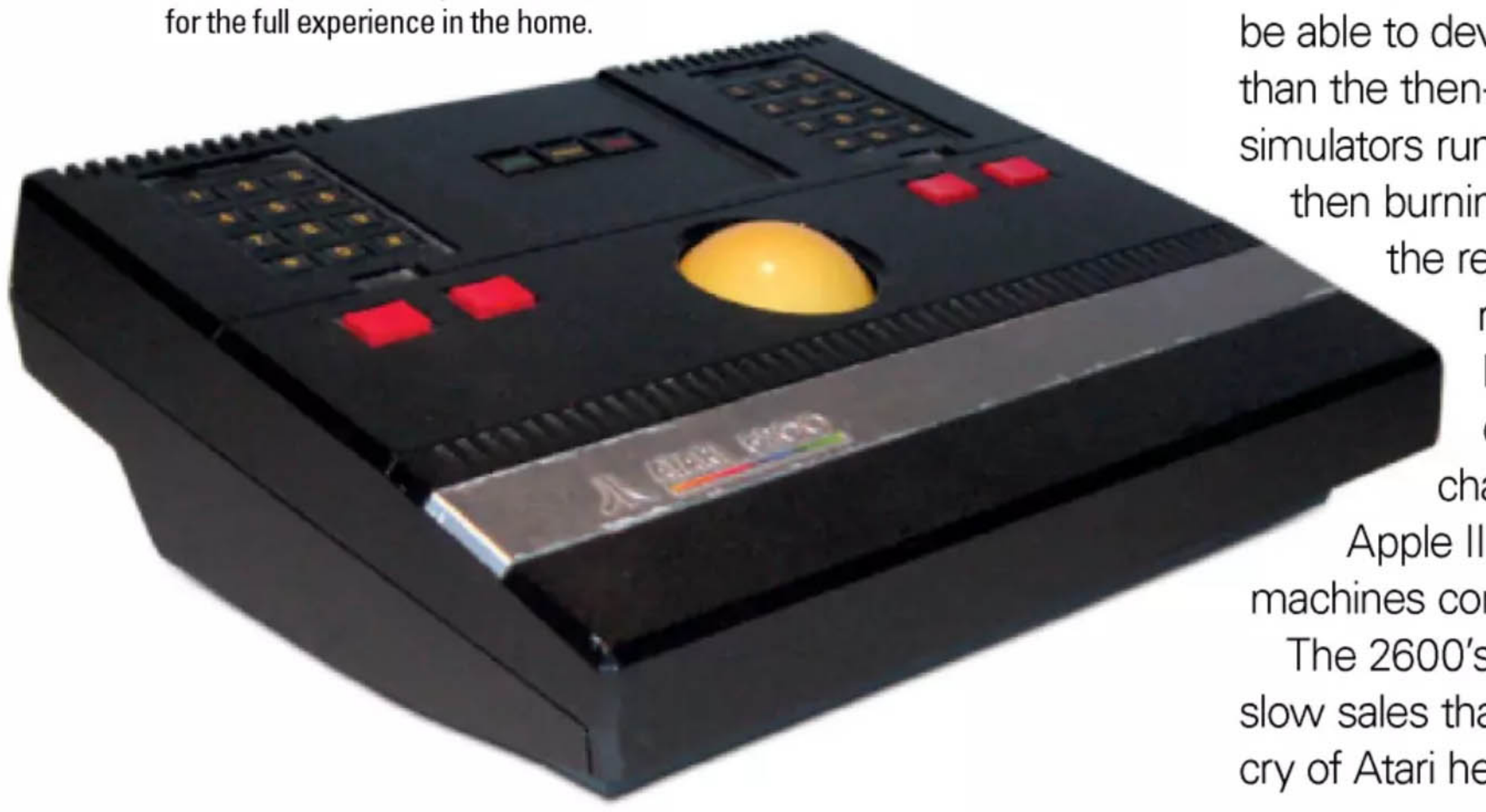
ORIGINAL PRICE: $299.95

BUY IT NOW FOR: $30-$100

ASSOCIATED MAGAZINES:
ATARI AGE, ANTIC

WHY THE ATARI 5200 WAS GREAT…
THE ATARI 5200 WAS NEVER GOING TO MATCH THE SUCCESS OF ITS ELDER BROTHER, BUT THAT DIDN'T MEAN IT WAS A COMPLETE FAILURE. SOME DECENT EXCLUSIVE AND SOLID CONVERSIONS HAVE ENSURED THAT ATARI'S UNDERDOG HAS BECOME A FIRM FAVOURITE WITH COLLECTECTORS OVER THE YEARS

» This planned deluxe controller featured an arcade-style trackball, for the full experience in the home.



The Atari 5200 may be unfamiliar to UK gamers, as it never saw a PAL release. What should have been the system to bring Atari into the Eighties, had it been released when originally proposed in the late Seventies, instead became a long and winding path to missed opportunities and bad execution. Stepping into the 5200's internal design gives the key to its origins and sheds some light on the troubled path it took as a concept and design, before it was finally released to market in October of 1982. Internally, the 5200 is an Atari 400 PCS (Personal Computer System) – the lower-end machine of Atari's late Seventies/early Eighties computer line – which is not a random fact being thrown at you when you take into account how the 400 was initially proposed.

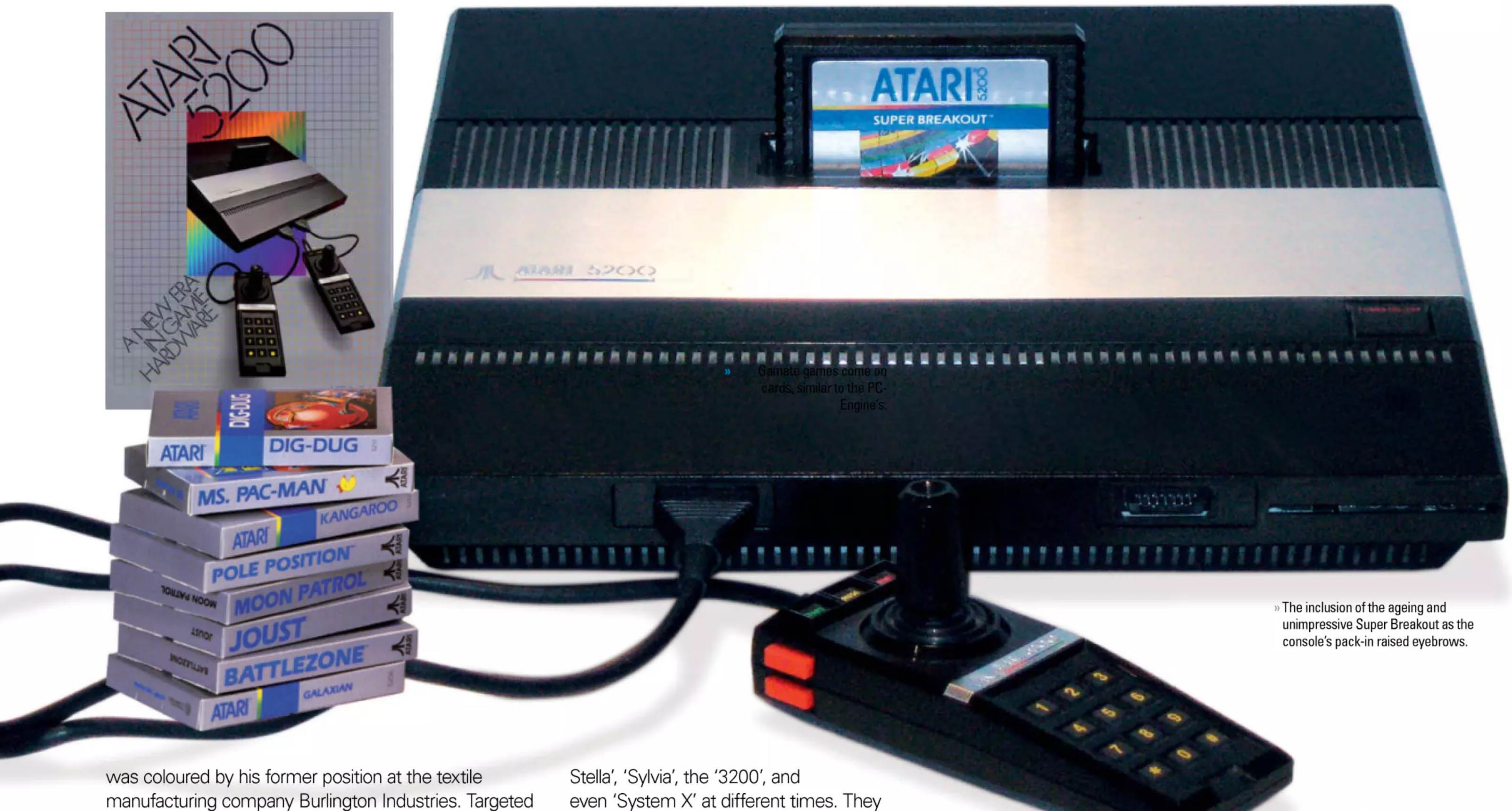
"I love Candy"

Codenamed 'Candy', the Atari 400 was initially meant to be a lower-end game console to complement the higher-end 'serious' computer, codenamed 'Colleen'. The vision of the design team leader, Jay Miner, the new game console was to replace the team's previous console, the Atari 2600. Miner's idea was to leverage the new custom sound and graphics chips that they were designing, for a console with a keyboard directly on it, the idea being that game programmers would be able to develop right on the console itself, rather than the then-arduous process of developing on 6502 simulators running on time-sharing mainframes and then burning the games to an EPROM to test on the real thing. As team member Joe Decuir recalled: "We knew we would need to leapfrog the 2600 before somebody else did. It had to support home computer character and bitmap graphics. We saw the Apple II, Commodore, and Radio Shack appliance machines coming."

The 2600's time being limited was echoed by the slow sales that 1978 Christmas season and the rallying cry of Atari head at the time Nolan Bushnell. Bushnell thought that, much like Atari's previous plethora of Pong machines, the 2600's time on the market was limited to around two years before the company had to introduce a new console. It was the same gut instinct that he had gone on since the early coin-op days of Atari, when to stay ahead of the 'me too' competitors it had to continuously innovate and release new machines or fall behind. Unfortunately – or fortunately, depending on how you look at it – Atari was a Warner Communications company now and not a private game-engineering firm. Warner's vision was one of stability for its company, and getting better sales out of its products on the market at the time.

It was a time when Atari itself was tanking, going from profits of $40 million in 1977 to what would be just $2.7 million in 1978. Bushnell being an absentee manager popping up with random directions and epiphanies didn't help, and in February 1978 Warner brought in a consultant to help make the company profitable again: Ray Kassar. Kassar and Bushnell spent the rest of 1978 butting heads, and Bushnell's stand at the Warner budget meeting that November would be his last. Getting in a shouting match with Warner's heads over drastically reducing the price of the 2600 to move it faster, they realised that he had to be completely taken out of the loop. After a feeble attempt to retain control of Atari by having a management meeting with Warner executives left out, the parent company decided to put Bushnell out to the corporate pasture, forcing him to retire.

By 1979, Kassar was in charge, and he put in place the idea to market the 2600 year-round, in direct opposition to Bushnell's plan – something executives at other videogame companies had been calling for since early in 1978. Atari also licensed the smash arcade hit Space Invaders, which, when released in 1980, gave the 2600 the shot in the arm it needed, and Atari was back up to $80 million in profits for that year. Kassar also put into place his vision for Atari's new computer, and in the process axed the idea of a replacement for the 2600. Kassar's vision for Atari's computer line



» Gamate games come on cards, similar to the PC-Engine's.

» The inclusion of the ageing and unimpressive Super Breakout as the console's pack-in raised eyebrows.

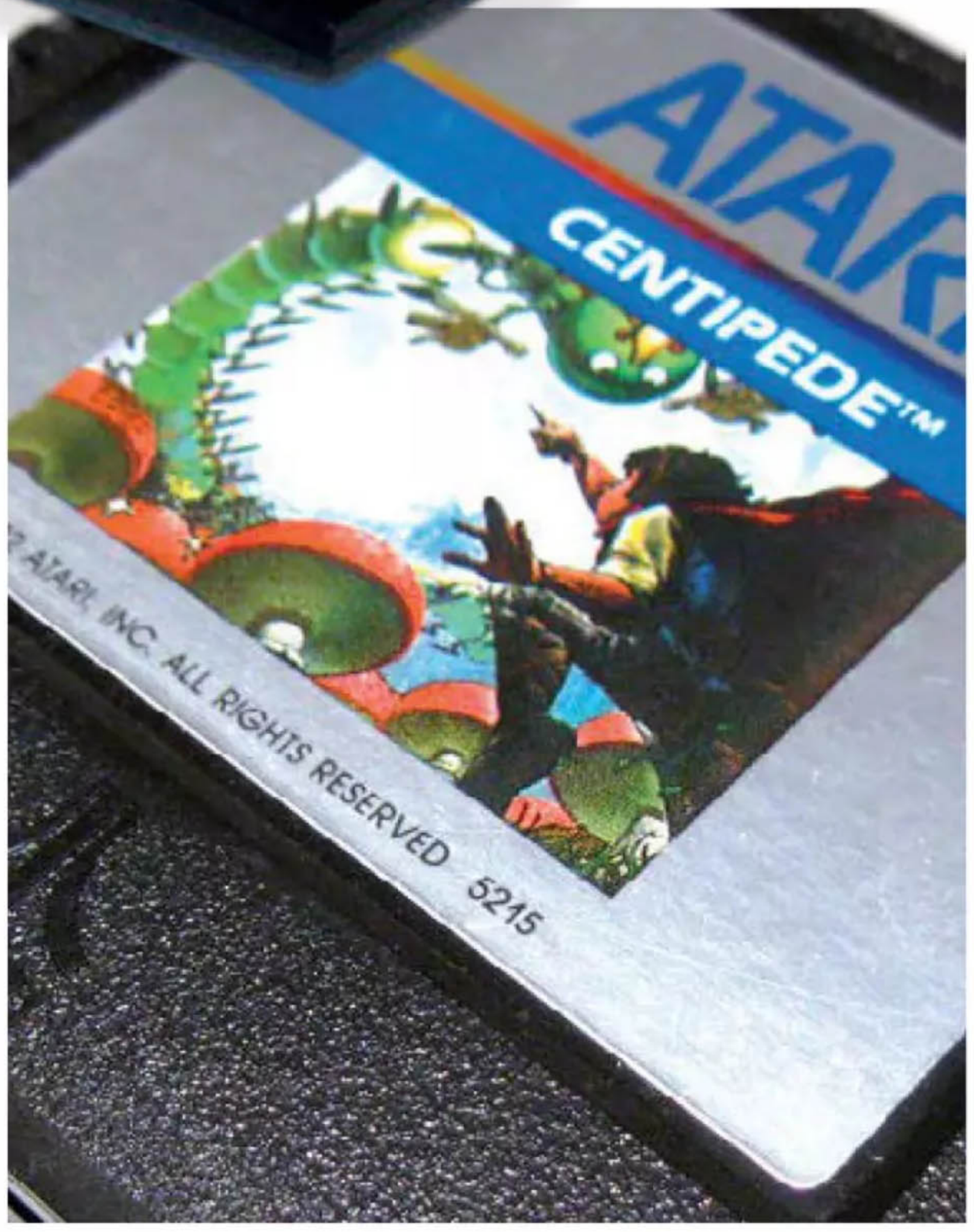
was coloured by his former position at the textile manufacturing company Burlington Industries. Targeted towards mass consumer products like towels, carpets, and other woven products, Kassar felt his experience at Burlington gave him a keen sense of consumerism. He felt the computers should be developed and marketed as easy-to-use, consumer-oriented products in contrast to the overly technically inclined audience that home computer designers were then targeting. And although his suggestion during a meeting that the computers be marketed in different colours to attract housewives caused some Atari employees to quit on the spot, it turned out to foreshadow the way the market would go under Steve Jobs much later with his coloured line of iMacs.

The problem was, with how right Kassar had been on everything, Bushnell was also right. By 1980 what would be the 2600's biggest competitor, Mattel's Intellivision, would be launched nationally, followed by a blitz of ads showing the Intellivision's more detailed sprites and the advantages of its 16-direction controllers, all summed up by a snooty and arrogant George Plimpton showing side-by-side comparisons. Combined with the rise of a third-party market of 2600 games thanks to the defection of some of Atari's game programmers to form Activision, Kassar knew that the company had to do something or lose its grip on the industry. And the rest of Atari knew that it now had no choice but to work on a direct answer to the Intellivision.

Steve Bristow and a team of engineers began working on an update to the 2600, codenamed 'Super Stella', 'Sylvia', the '3200', and even 'System X' at different times. They decided to bring the 2600's design more towards the new computer line by reproducing the format of the custom graphics chip team of GTIA and ANTIC.

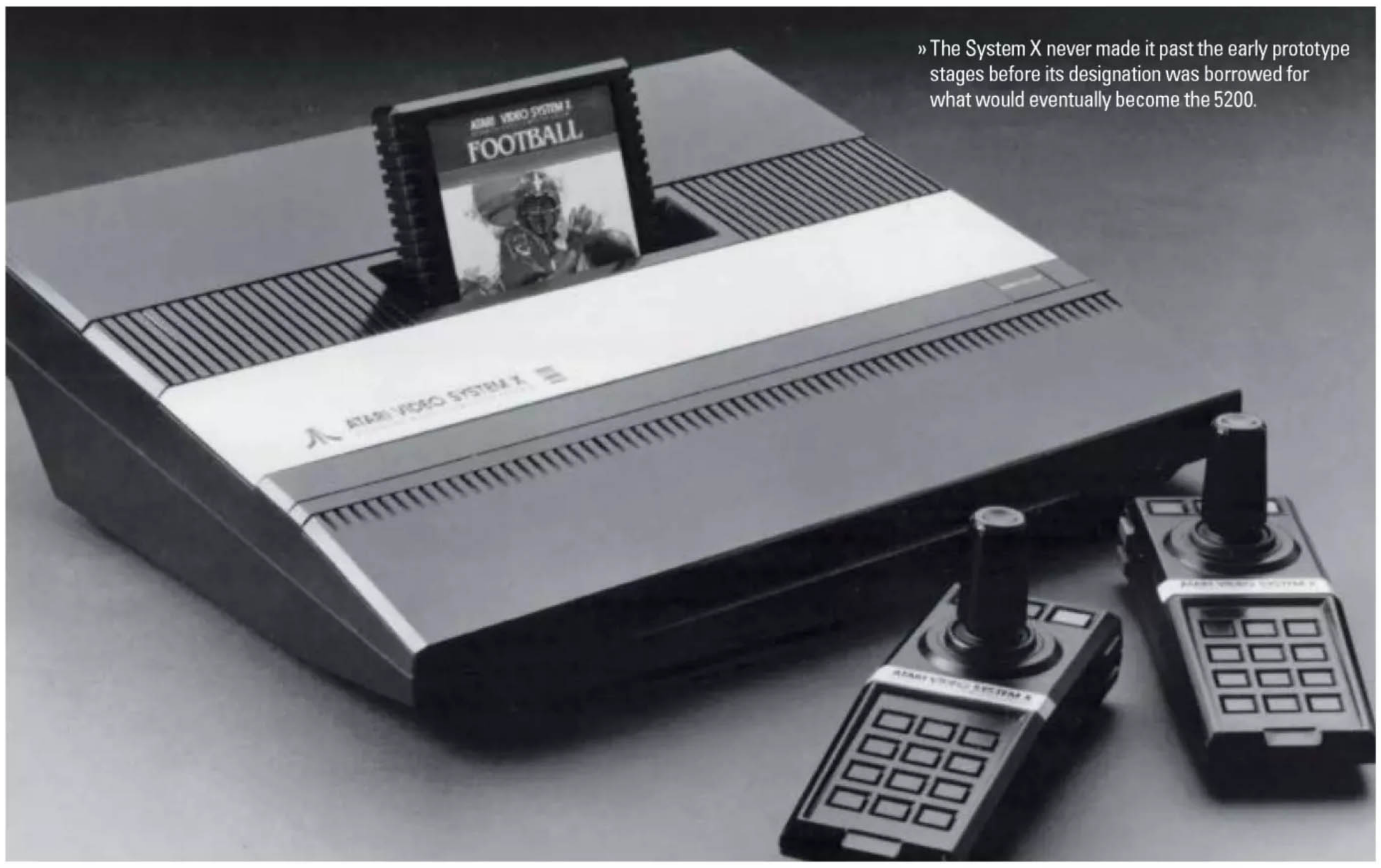
Backwards compatibility

Keeping it backwards compatible with the 2600 was imperative, and accomplished by substituting the GTIA with an advanced version of the 2600's TIA graphics and sound chip called Super TIA or STIA. Likewise, System X was to get its own version of the ANTIC called FRANTIC, and the addition of a Votrax voice synthesis chip. It would also get a memory upgrade from 128 bytes to a full 2K of memory, which was a big upgrade for 1980 and more in line with Intellivision's standards, if not more powerful when the ANTIC's display list technology was considered. The console and controllers would use an advanced wedge shape design form by designer Roy Nishi, which he was also using for the in-development remote control version of the 2600 called the Atari 2700. Unfortunately, System X only got as far as full schematics and a black box development unit, along with case and controller mockups, before it was scrapped. Apparently the guys in the Home Computer Division (HCD) were raising a ruckus over their technology being marginalised if the Super TIA would have gone all the way through development. In a classic example of wasting time by running in circles, the push was made to use Atari's PCS technology.



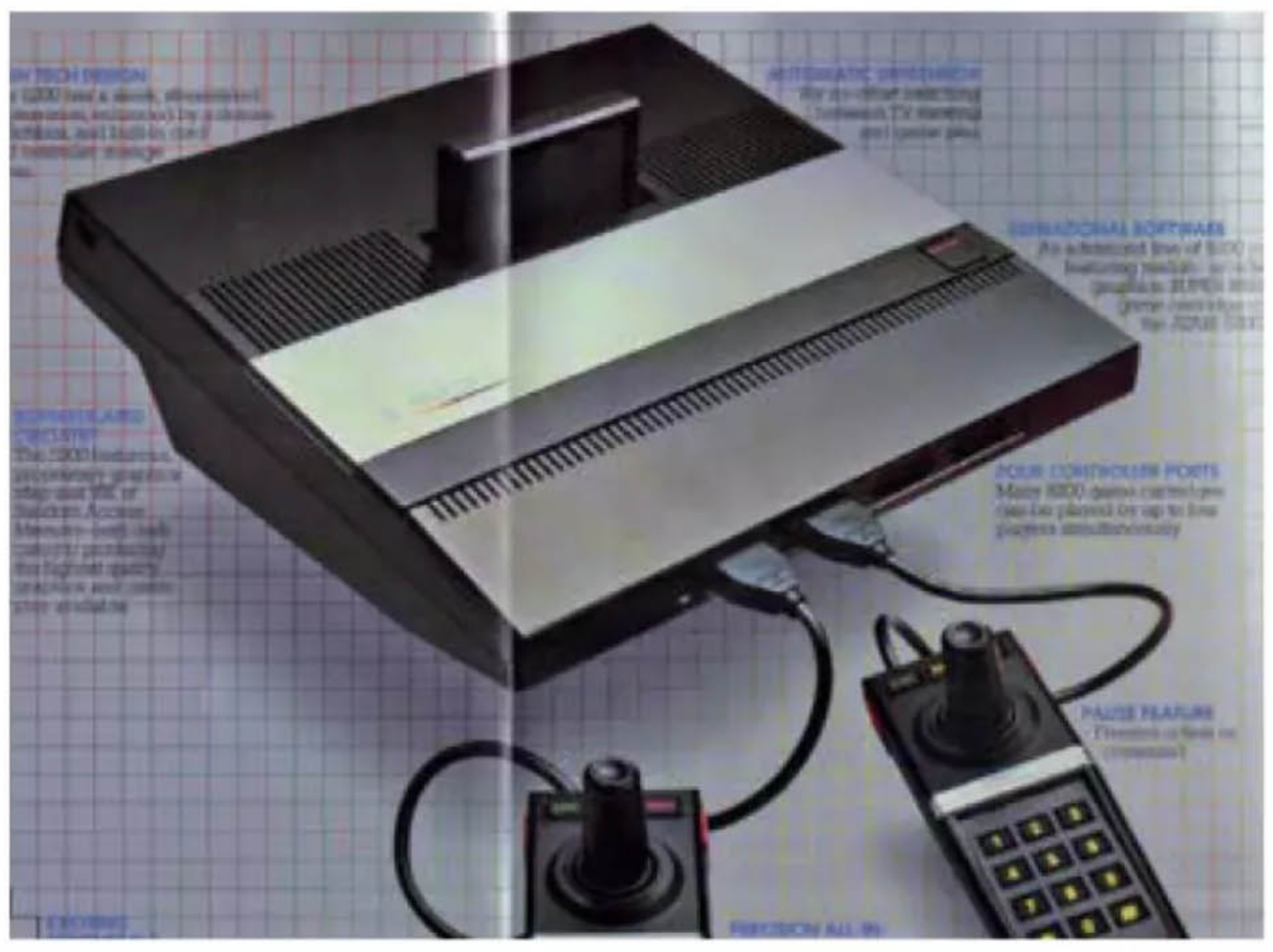
Recycling the System X designation and some of the casing and controller work, in 1981 this new system's development started. This time, however, given the full support of Kassar and the Consumer Electronics Division (CED), all stops would be pulled to create a deluxe game system. Atari was intent on crushing Intellivision, and making an 8-bit system that would be a full arcade experience to the home.

> "WE KNEW WE NEEDED SOMETHING TO LEAPFROG THE ATARI 2600 BEFORE SOMEBODY ELSE DID IT"
>
> JOE DECUIR ON THE IMPORTANCE OF CREATING THE ATARI 5200



» The System X never made it past the early prototype stages before its designation was borrowed for what would eventually become the 5200.

Zenji
ACTIVISION
Q*bert
Q*bert
FROGGER
MINER 2049er
For ATARI 5200



ATARI 5200
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First, the team started moving the entire multiboard PCS architecture to a single board system that would fit in the wedge-shape case form factor. This included keeping the unique four controller ports, but moving to a novel hookup scheme by combining the power and antenna cord into a single cable that attached to a combined antenna/power box. A setup that had not been seen since the RCA Studio II in 1977, Atari maked it auto-switching – the very first console to do so.

Secondly, work was done to try to bring in controller features to compete against Intellivision's 16-direction keypad-driven controller, while providing the functionality for paddle-driven games that a digital controller simply could not support. The answer came in the form of a full analogue controller driven by two potentiometers, which when combined together would give a full 360-degree range of motion as well as provide accuracy for paddle games. It had the added benefit of being able to support velocity-tracking to control a character's speed of motion. The side-mounted buttons that featured on the original System X's controllers were split into two A and B buttons on each side. Finally, a full keypad was added to the controller's empty space to allow the extra input control expected in the more advanced games on Atari's computer systems. Besides the start and reset buttons, both also found on the PCSs, a feature that gamers had been clamouring for was added as well: a pause button. This new controller was referred to as the 'Universal Game Controller', meant to imply that this was a deluxe controller – a luxury experience. The team leveraged the now-cancelled Atari 2700's console-based controller storage area, complete with flip-up smoked plastic lid to complement anyone's early Eighties entertainment centre.

"DURING MUCH OF THE DEVELOPMENT, THE NAME CHANGED TO PAM"

THE ATARI 5200 WAS ONCE KNOWN AS THE PERSONAL ARCADE MACHINE

The case itself also was updated to co-ordinate with the HCD's pending update to its computer line, the 1200XL, to give a unified look across the entirety of Atari's 1982 product line. In came glossy and matte black plastic combined with a futuristic brushed metal inlay that gave it a very stylish look.

A bevy of peripherals were also planned. First and foremost was a keyboard expansion that was to plug in through a back expansion port, giving the 5200 some computer capabilities, including peripheral expansions. Second was a voice expansion module being designed by Milton Bradley for Atari, which would coincide with the version that it was designing for the 2600 as well. Third was a full four-voice, 48-octave musical keyboard with stereo output. Fourth was a full arcade-style 'Trak-Ball' controller, foreshadowing the type of in-home full-size arcade controllers used by MAME enthusiasts almost two decades later. Last was a 2600 compatibility module, which, contrary to popular myth, was planned from the beginning.

During much of the development, the system's internal name was changed to PAM (Personal Arcade Machine) before the final name was decided on prior to its public unveiling: the Atari 5200 Home Entertainment System. The move caused a change in the 2600's naming as well, just in time for its move to the all-black version affectionately known to collectors as the 'Darth Vader' model. Previously referred to as simply the Video Computer System, it now became the Atari 2600. Atari also updated the console and game boxes to go with the new launch, with boxes for both systems using a silver motif. Additionally, game boxes received futuristic hologram stickers, remnants of the shut-down Atari Cosmos tabletop game project.

Atari was also very careful in its pending marketing strategy for the system to explain that the 5200 was not going to be a replacement for the 2600. At $299.95, it was to be considered a high-end, state-of-the-art videogame system, with the 2600 and 5200 comprising "two home game systems in the same spirit in which an automobile manufacturer builds different models to suit different tastes".

With press first going out in May of 1982 and the big intro at the June CES with a view to an October launch, things were looking great for Atari's new console. Or so they thought…

All fall down

In May, when Atari was announcing its next-generation system, another company thought to be long out of videogames surprised everyone. Coleco started announcing its own next-generation videogame system, the ColecoVision. Atari was caught completely off-guard and had to scramble to start a strategy against its new main competitor, once it was able to see the console at the June CES. Here it was, ready to kill Mattel and claim victory over the market by creating a new high-end niche while dominating the low end, and now the game had completely changed.

To make matters worse, during August and September focus groups were less than positive about the 5200's controllers. While many of the testers understood the possible advantages of learning to use the new controller format in the long run, most complained about the lack of resistance in the controllers, as well as the difficulty in playing four-direction precision games like *Pac-Man*.

Also, in direct side-by-side focus tests with the ColecoVision, testers thought games on both systems looked equally great, with Atari's only advantage being that the system's case and controller styling were more appealing. Media reviews had a similar outlook, with the addition of complaints that the initial launch titles were the same old games already on the 2600, including the surprise inclusion of *Super Breakout* as the pack-in game instead of one of Atari's more high-profile licences like *Pac-Man*.

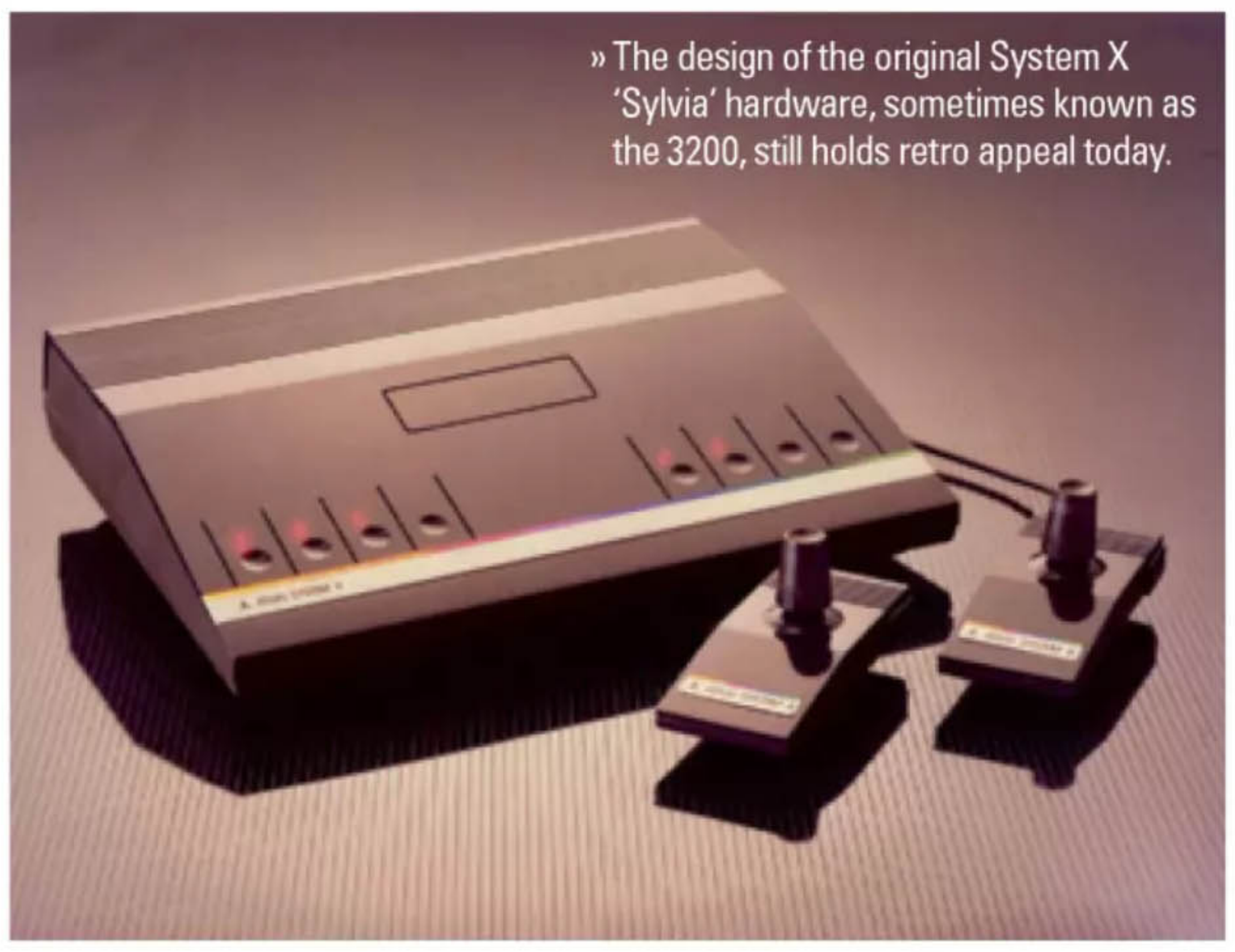
Likewise, many of the planned expansions and peripherals became like roadkill on the road to market survival. CED's pride and competition against HCD caused it to want to make sure the 5200 was nothing like the Atari 400, and that it would never be mistaken for a computer. Axed were the keyboard expansions by the October launch, which soon after also led to the cancellation of the voice expansion for both the 5200 and 2600, and an eventual lawsuit from Milton Bradley.

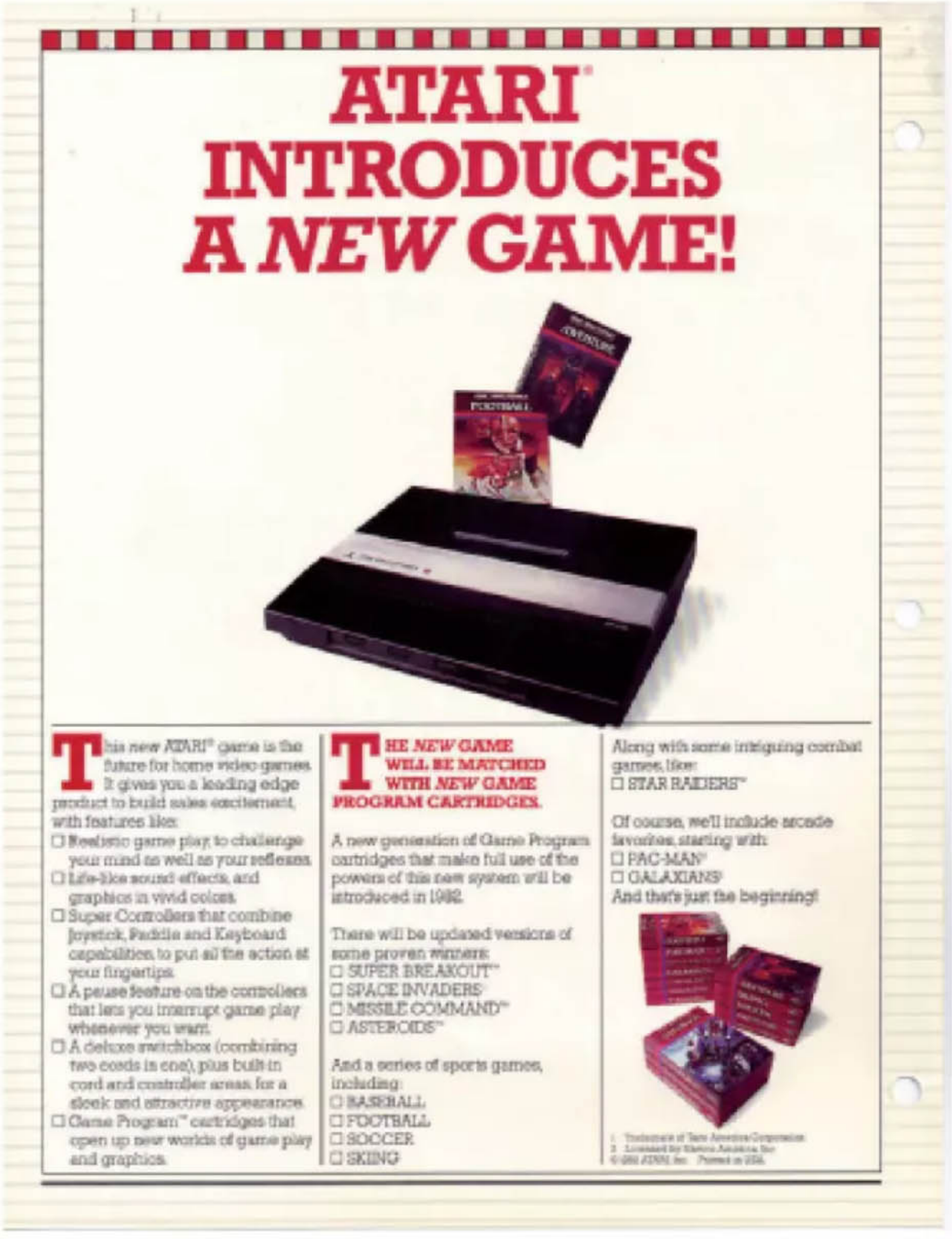
Atari worked to rectify many of these faults, however, and managed to release a good number of new titles for the system over the coming year. It also managed to delay some games for its other platforms to make sure that the 5200 had a certain degree of exclusivity. By 1983, a revised two-controller-port model was released with sturdier parts on the controllers and a new pack-in game: *Pac-Man*. It also dropped the odd single power/television cord in favour of a more traditional two-cable separate switchbox setup. However, by that time sales were already seen as lacklustre, and the console's future was being questioned, both inside the company and by numerous industry commentators.

To make matters worse, the 2600 module was absent almost the entire time, giving Coleco the advantage of backwards compatibility with the 2600 via its own module. By the time it appeared for the two-port model, owners of the older four-port version found that they couldn't use it, save for the few that were lucky to get the last revision before the move to the newer model.

A final cost-reduced version was being worked on, codenamed the 5100, which cut the physical size of the console in half and included new CX-52L controllers – especially designed self-centring joysticks with spring-loaded side buttons – but it never made it to market. By February of 1982, production of the 5200 was secretly ended. When Atari finally acknowledged it in May, it was ready to position the upcoming Atari 7800 as its replacement. As is well-known, however, Atari became a prominent victim of the North American videogame crash of 1982-1984, with the entire consumer division sold off to Jack Tramiel to form his Atari Corp.

Unknown to many collectors, Tramiel actually re-released the four-port 5200 version in 1985 in an effort to sell off his sizeable inherited back stock of products. Featuring cost-reduced packaging and a return to the Super Breakout pack-in, he also re-released many of the previous games in similar packaging. Tramiel brought to market several previously finished but unreleased games that were thought victims of the crash: *Gremlins* and the groundbreaking Lucasfilm titles *Rescue On Fractalus!* and *Ballblazer*. Actually generating strong sales for several years during this era of the NES, Sega Master System and Atari 7800, support for the 5200 was finally dropped by 1991, closing the book on what was once to be Atari's flagship console.


» The design of the original System X 'Sylvia' hardware, sometimes known as the 3200, still holds retro appeal today.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- ☐ STAR RAIDERS™

Of course, we'll include arcade favorites, starting with:
- ☐ PAC-MAN²
- ☐ GALAXIANS²

And that's just the beginning!

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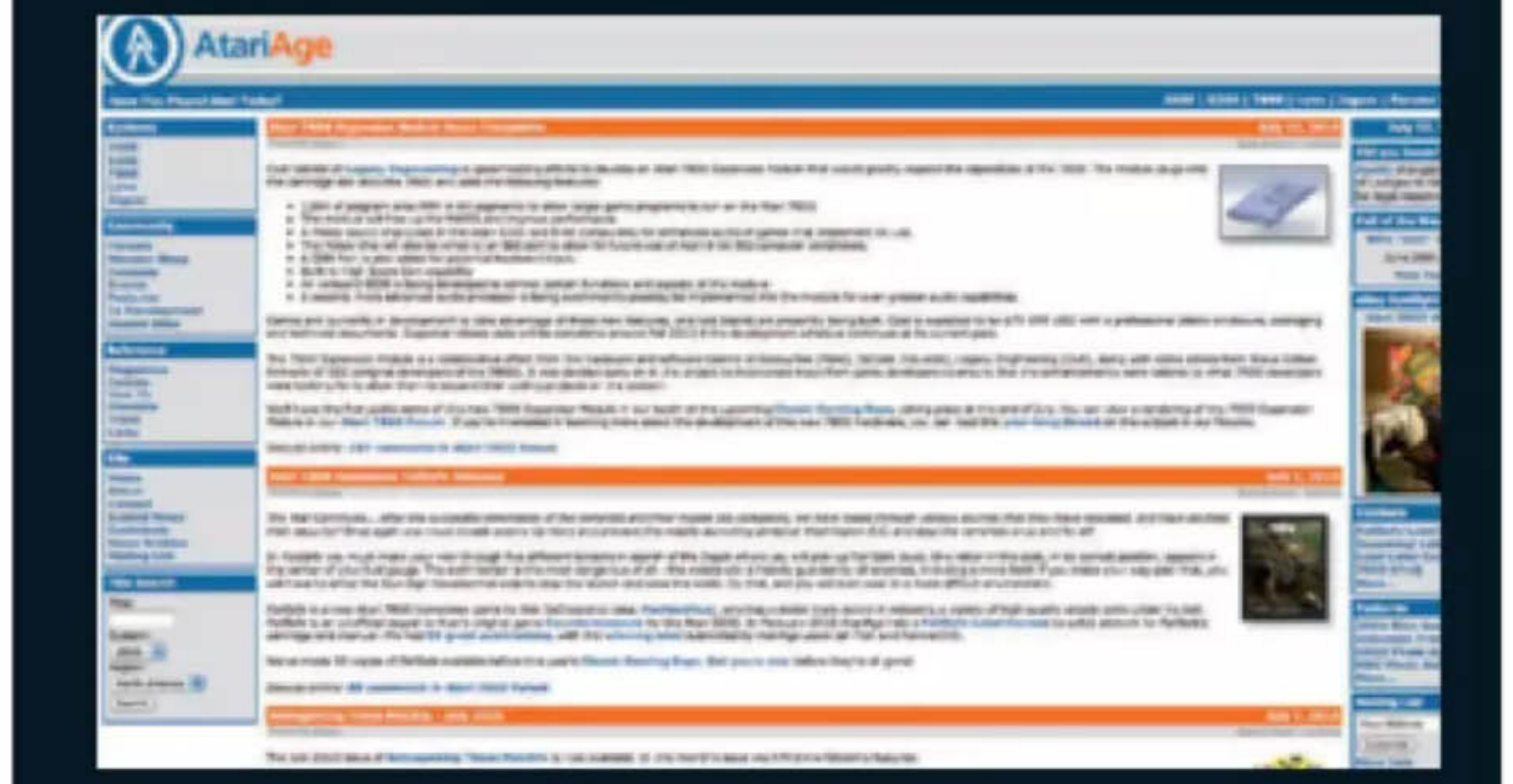
COMMUNITY

ATARI
www.atarimuseum.com

1. Atari Museum

www. atarimuseum.com

The Atari Museum, home of the Atari Historical Society, is the premier Atari archive. Run by noted Atari historian Curt Vendel, the site houses information and exclusive material.



2. AtariAge

www.atariage.com

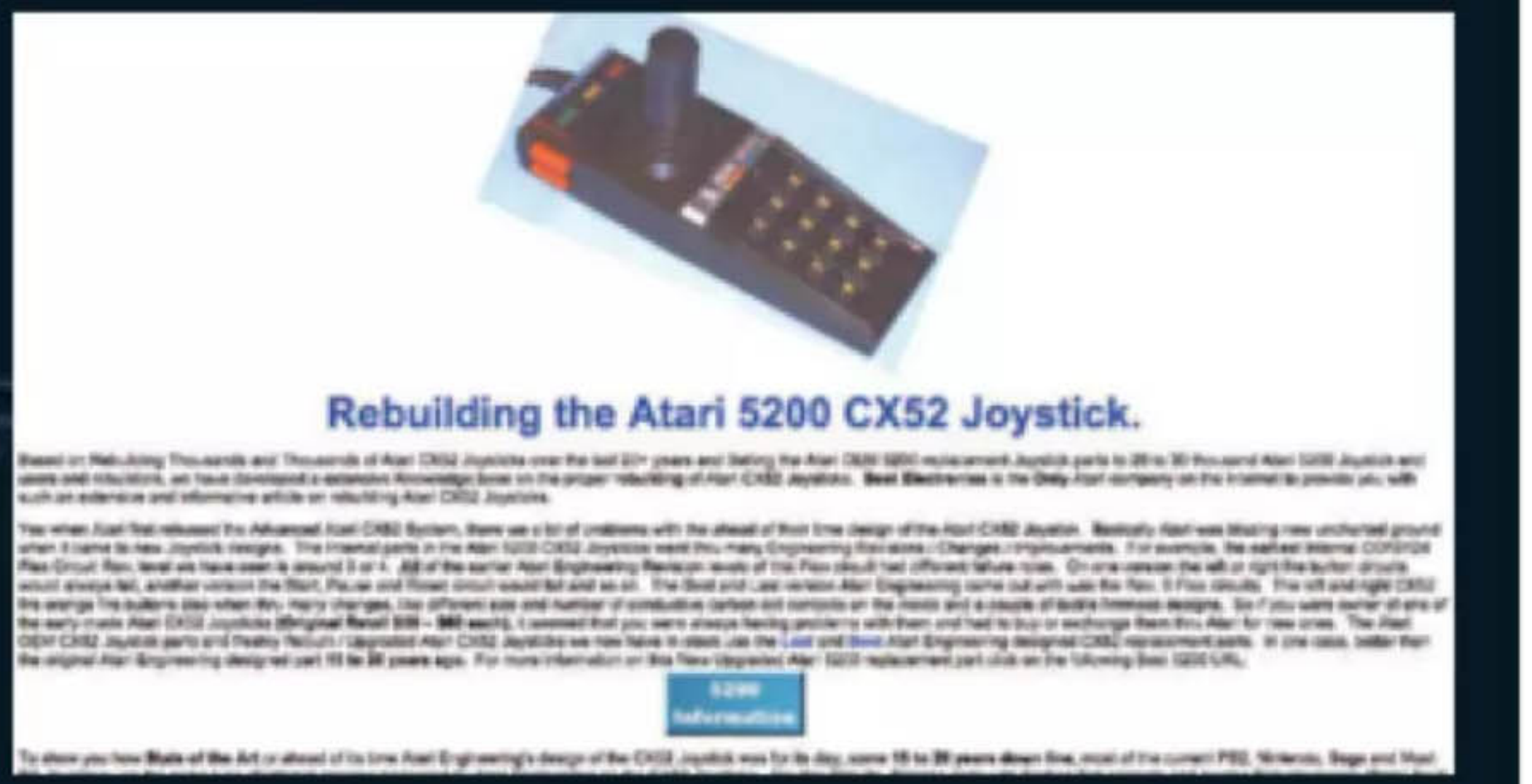
If you want to find the current fan base of the 5200, you'll find it at AtariAge's bustling online community. The de facto community site for the Atari scene, you'll also find a store that supports current 5200 homebrew authors.

Cafeman's Atari 5200 Supersystem Features
The Preface …
The Controllers …
The Games …

3. Cafeman's Atari 5200 Supersystem Page

cafeman.www9.50megs.com/atari/atari5200.html

Ron Lloyd's shrine to the 5200 hasn't been updated in a while, but still remains a great source of information and commentary from original Atari 5200 game developers.


Rebuilding the Atari 5200 CX52 Joystick.

4. Best Electronics

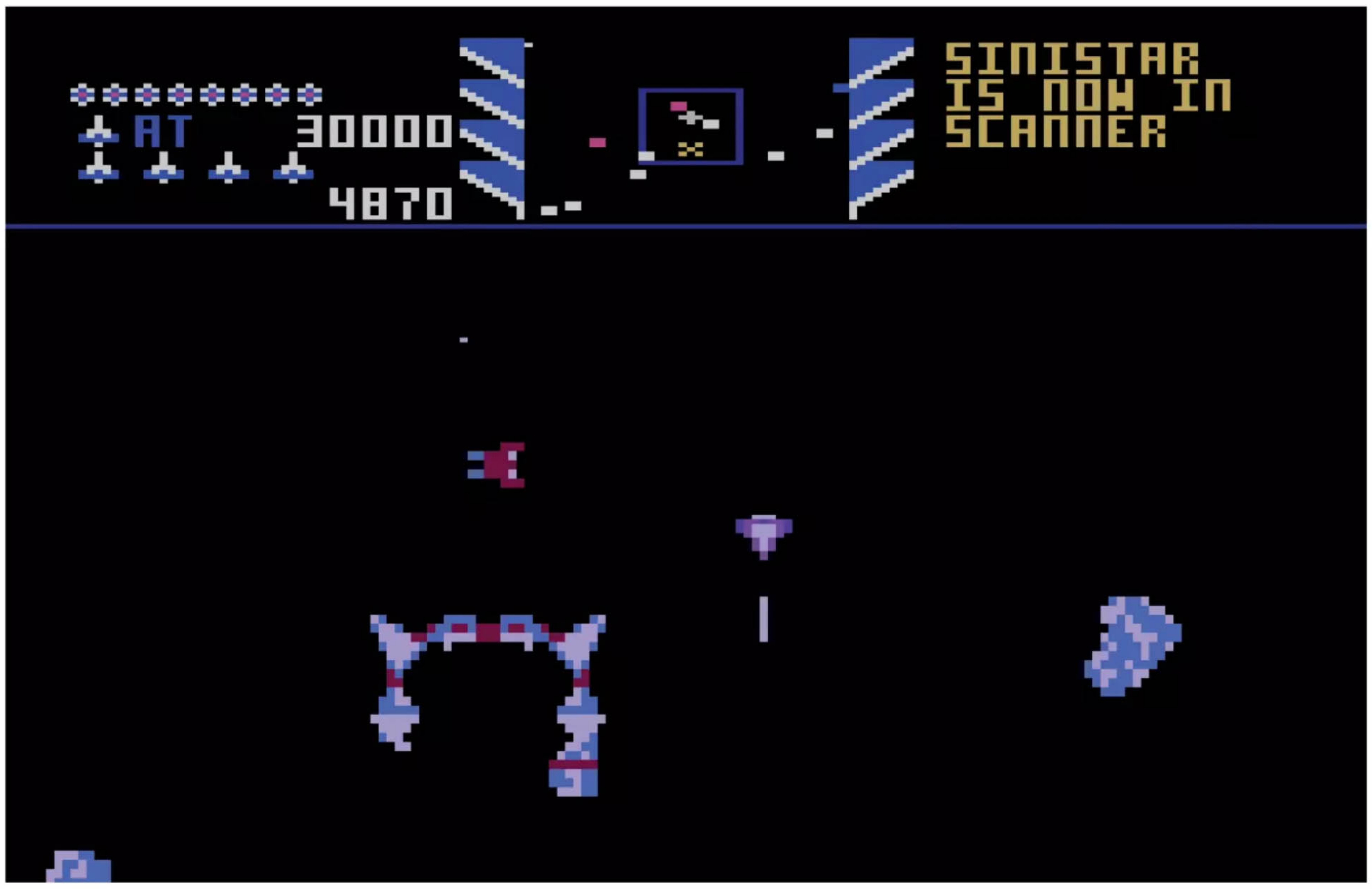
www.best-electronics-ca.com/cx52_j.htm

We've all heard about the problems with 5200 controllers breaking down. This is the best place to go for every single part needed to repair your precious controllers.

Special thanks to Kris Kelley and the Atari Historical Society (atarimuseum.com) for their help with this article

ATARI 5200: PERFECT 10 GAMES

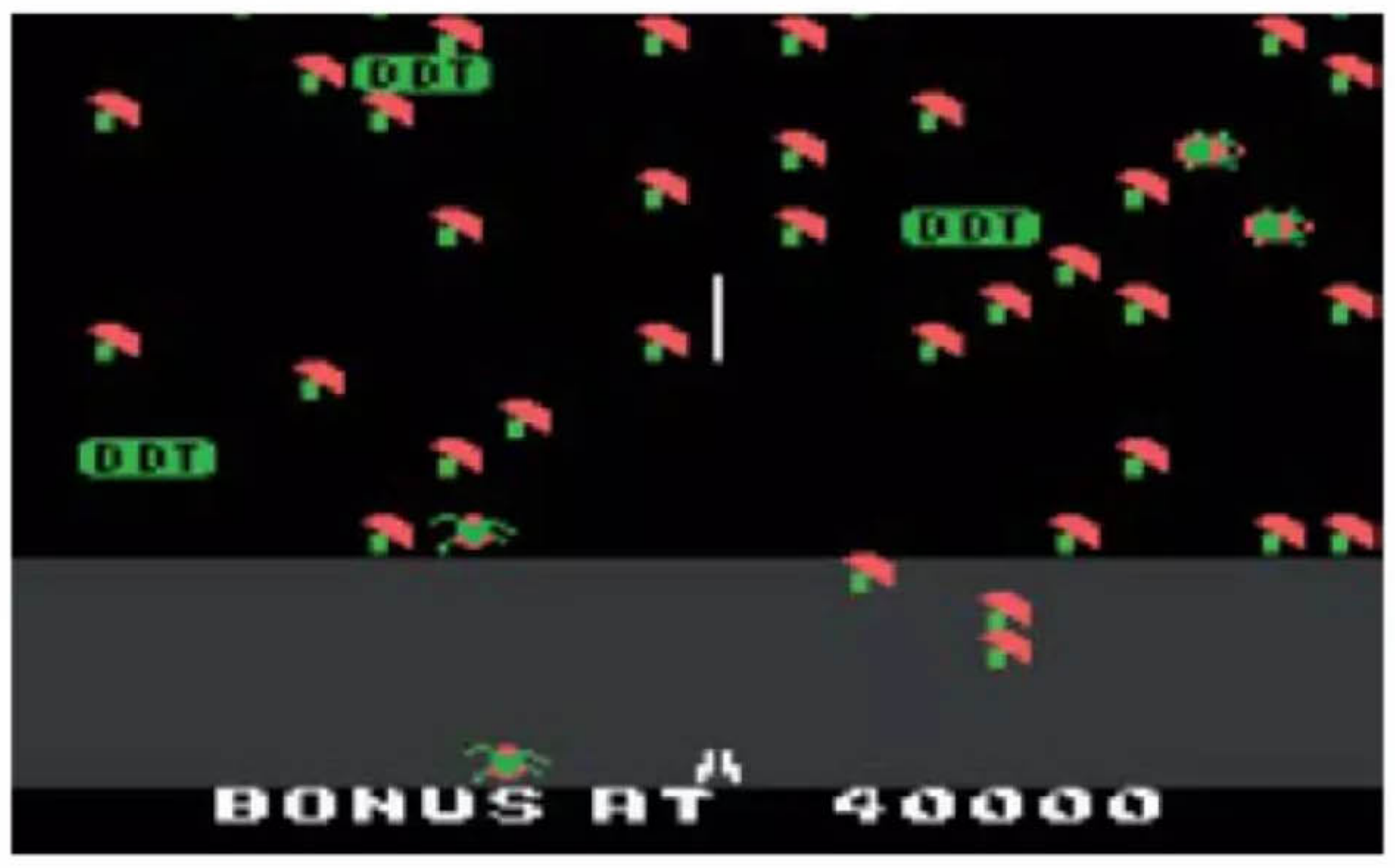
DUE TO UNFORTUNATE TIMING, THE ATARI 5200 DIDN'T HAVE THE LARGEST OF CATALOGUES. FORTUNATELY BOTH ATARI (AND LATER THE HOMEBREW COMMUNITY) RELEASED SOME TRULY FANTASTIC GAMES FOR IT



SINISTAR

» **RELEASED: 2010** » **PUBLISHED BY: ATARIAGE**
» **CREATED BY: JEFFREY P. MILHORN**

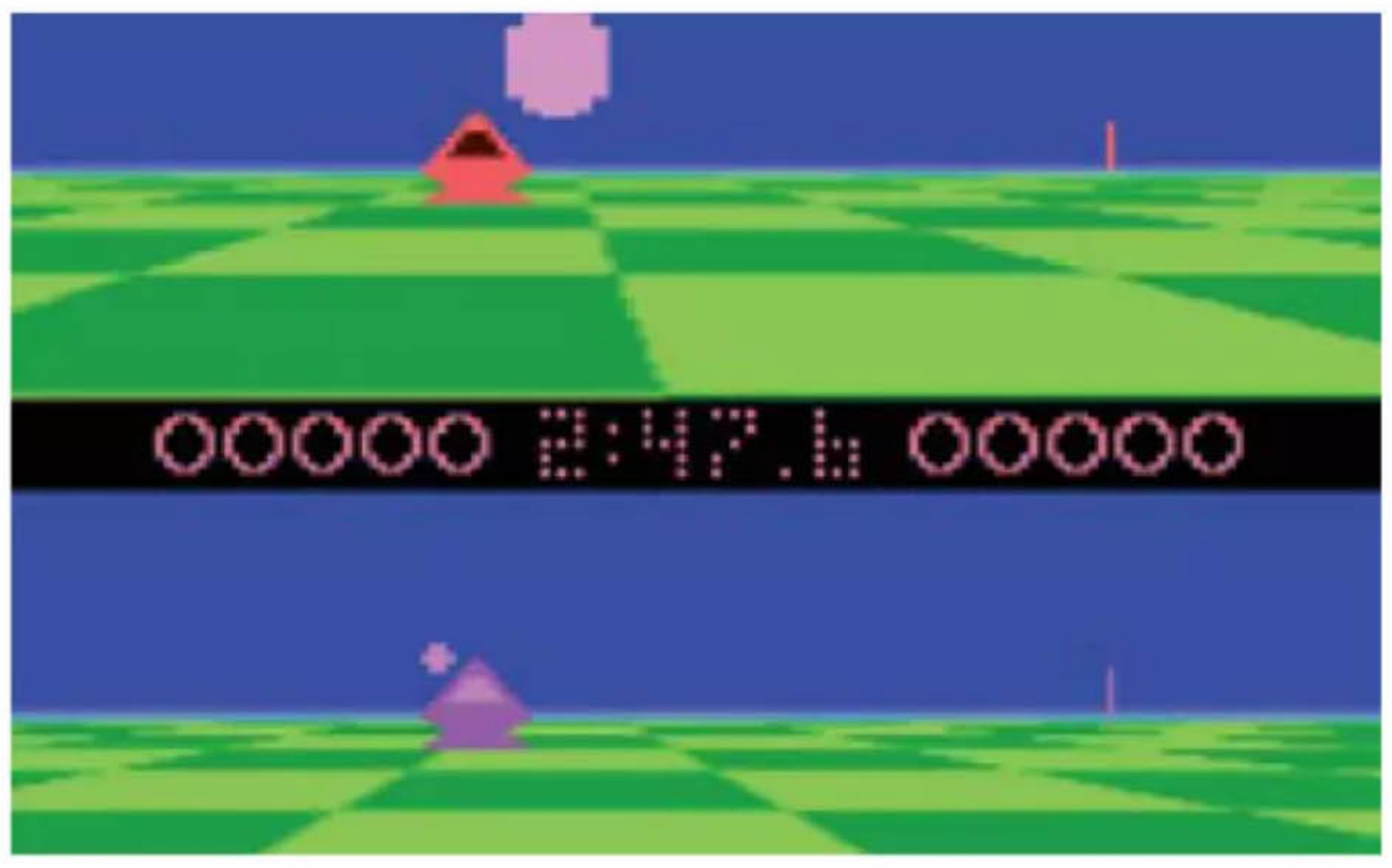
1 The first coin-op game to inspire fear in gamers with its boss's demonic-sounding digitized voice, Atari was working on a port for its 8-bit computers when the company cancelled it due to the severe financial problems it had at the time. Almost completely finished save for some minor points, it remained a distant memory while passing through many hands over the years. That is until recently, when a 5200 homebrewer ported the game to the 5200 and AtariAge decided to make full productions complete with great label art. This stunning port truly shows off the 5200's capabilities of reproducing early Eighties arcade titles, and the gameplay is great, successfully re-creating the franticness of the arcade original.



MILLIPEDE

» **RELEASED: 2002** » **PUBLISHED BY: ATARIAGE**
» **CREATED BY: STEVE CRANDALL**

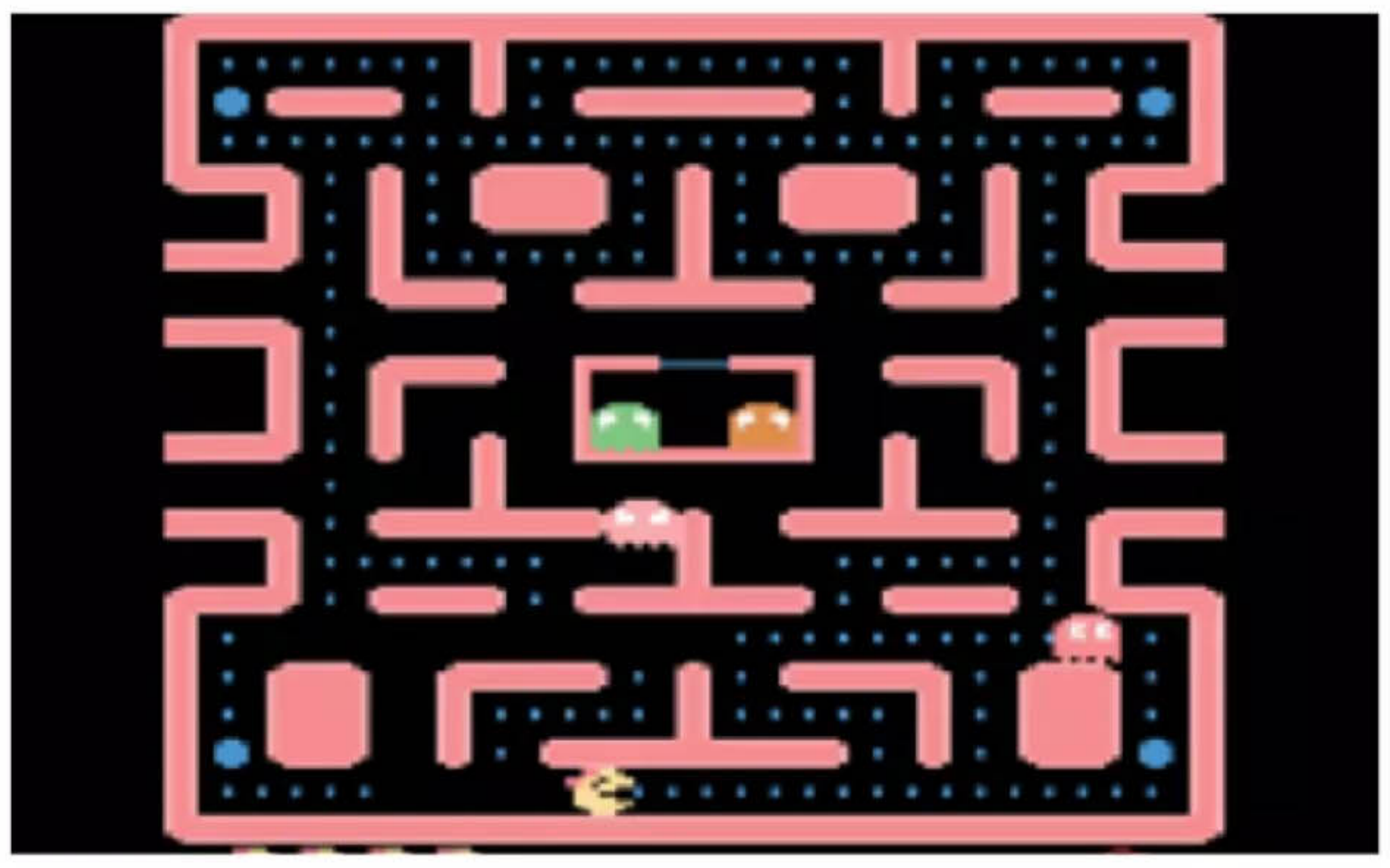
2 Yet another victim of Atari's implosion, *Millipede* is a port of Atari's seminal follow-up to its monster 1980 hit, *Centipede*. Ready to go and even listed in the 1984 catalogue back in the day, its axing meant that gamers wanting to play *Centipede* would have to either purchase the 8-bit computer version or wind up having to suffer through a pretty terrible 2600 port. That is until AtariAge once again came to the rescue with a full re-production. *Millipede* is truly a joy to play with the 5200's Trak-Ball (yes, Atari spelled it with a "k"!) controller. The graphics and gameplay are spot on, with even the animated title screen re-created perfectly.



BALLBLAZER

» **RELEASED: 1986** » **PUBLISHED BY: ATARI**
» **CREATED BY: LUCASFILM**

3 *Ballblazer* was one of Lucasfilm Games' first titles. Taking full advantage of the 8-bit computer and 5200's scrolling capabilities, Lucasfilm managed to create a beautiful futuristic 3D 'soccer' match complete with continuous fractalised music. Because the partnership was such a big deal, Atari wanted to hold off the computer release to give the 5200 and then the 7800 some exclusivity. Unfortunately it wound up backfiring, and the company imploded during the interim, leaving 5200 owners having to wait until Jack Tramiel revived 5200 sales in 1986. Some would say it was certainly worth it though.



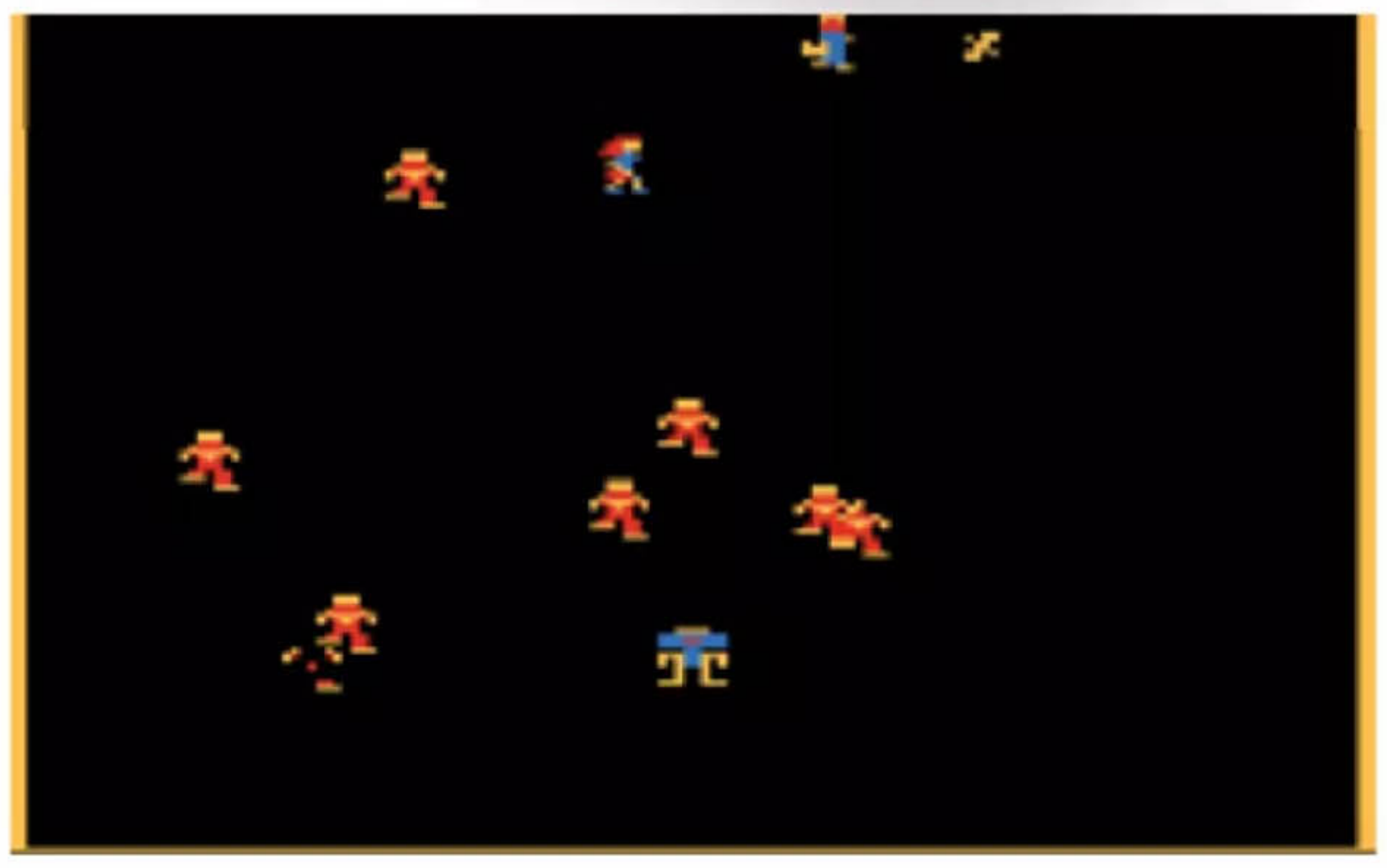
MS. PAC-MAN

» **RELEASED: 1983** » **PUBLISHED BY: ATARI**
» **CREATED BY: IN-HOUSE**

4 What can be said about this bow-wearing beauty that hasn't already been said? Well how about that the 5200 port is an extremely solid re-creation of her arcade appearance complete with all the fun intermission animations and different levels? This Atari conversion is a massive step up from the earlier-released *Pac-Man* for the 5200, as this time around the programmers concentrated more on re-creating the overall faithfulness of the arcade game rather than just the speed of the original. A very solid conversion that's definitely worth tracking down if you are a fan of the arcade version.

“ANOTHER FANTASTIC ARCADE CONVERSION THAT 5200 COLLECTORS SHOULD IMMEDIATELY SEEK OUT”

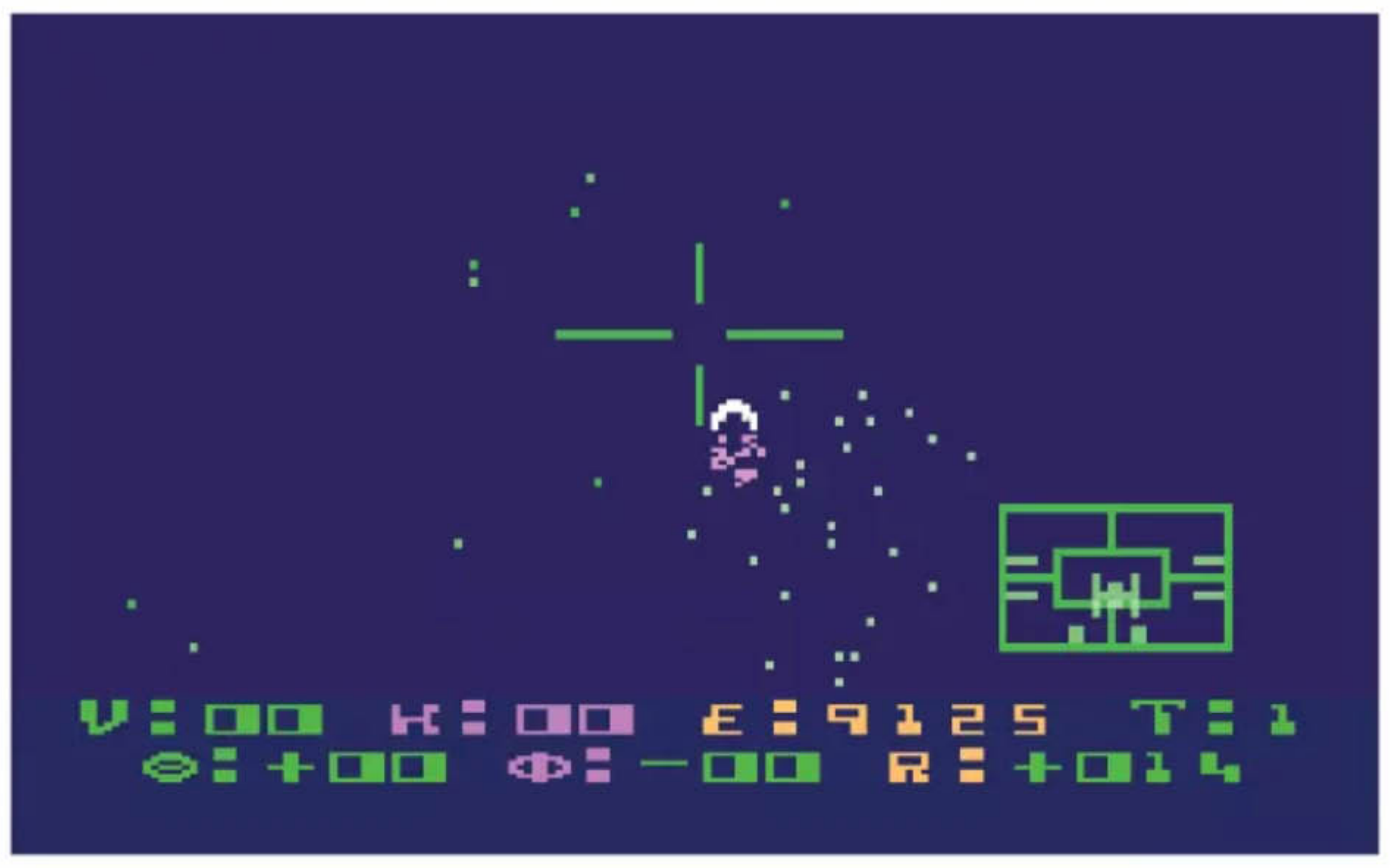
DON’T MISS ROBOTRON: 2084



ROBOTRON: 2084

» RELEASED: 1983 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

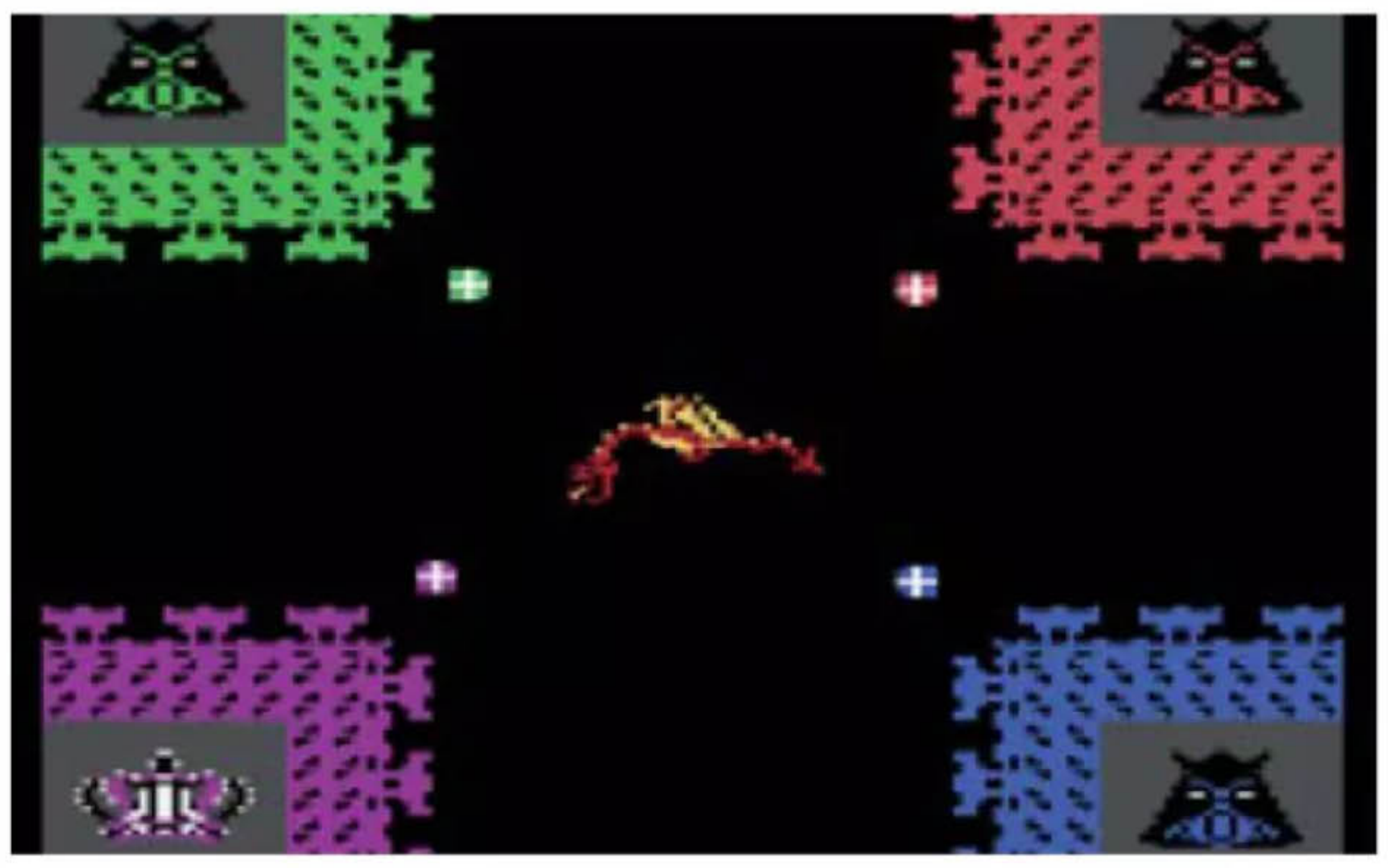
5 What can get crazier than a session of Eugene Jarvis and Larry DeMar’s classic in the arcade? How about a near-perfect port at home complete with dual joysticks? The 5200 version shipped with a special joystick coupler that enabled you to use both of the 5200’s controllers to play the game as it was meant to be played. The looser feeling of the 5200’s analogue sticks truly makes the fast multi-directional twitching a breeze to carry off. Some even like playing it on here better than the original. Another fantastic arcade conversion that 5200 collectors should immediately seek out.



STAR RAIDERS

» RELEASED: 1982 » PUBLISHED BY: ATARI
» CREATED BY: JOE COPSON

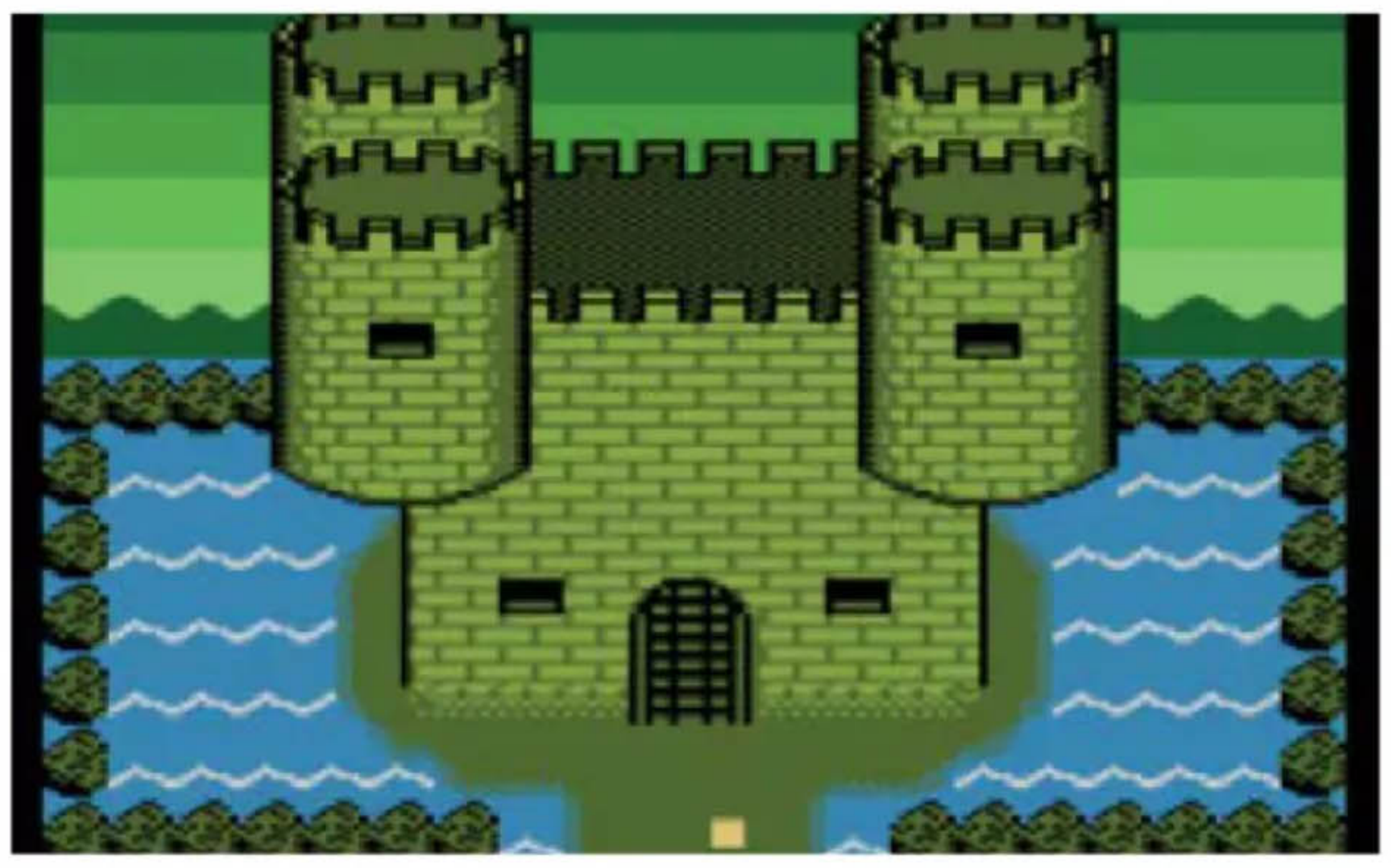
6 You simply can’t say you’ve experienced gaming on any Atari platform until you’ve spent time playing this classic. Designed for Atari’s computer line in 1979 to show off their advanced capabilities, it was popular enough to later port to the Atari 2600, 5200, ST, and even inspire a graphic novel by DC comics. You’re treated to a first-person view of a cockpit going through space, reminiscent of Exidy’s Seventies classic *Star Fire*. With gameplay similar to the classic *Star Trek* text game, you go from sector to sector (via your trusty galactic chart) clearing each of those pesky Zylon ships. An instant classic that shouldn’t be missed.



CASTLE CRISIS

» RELEASED: 2004 » PUBLISHED BY: SELF-PUB
» CREATED BY: BRYAN EDEWAARD

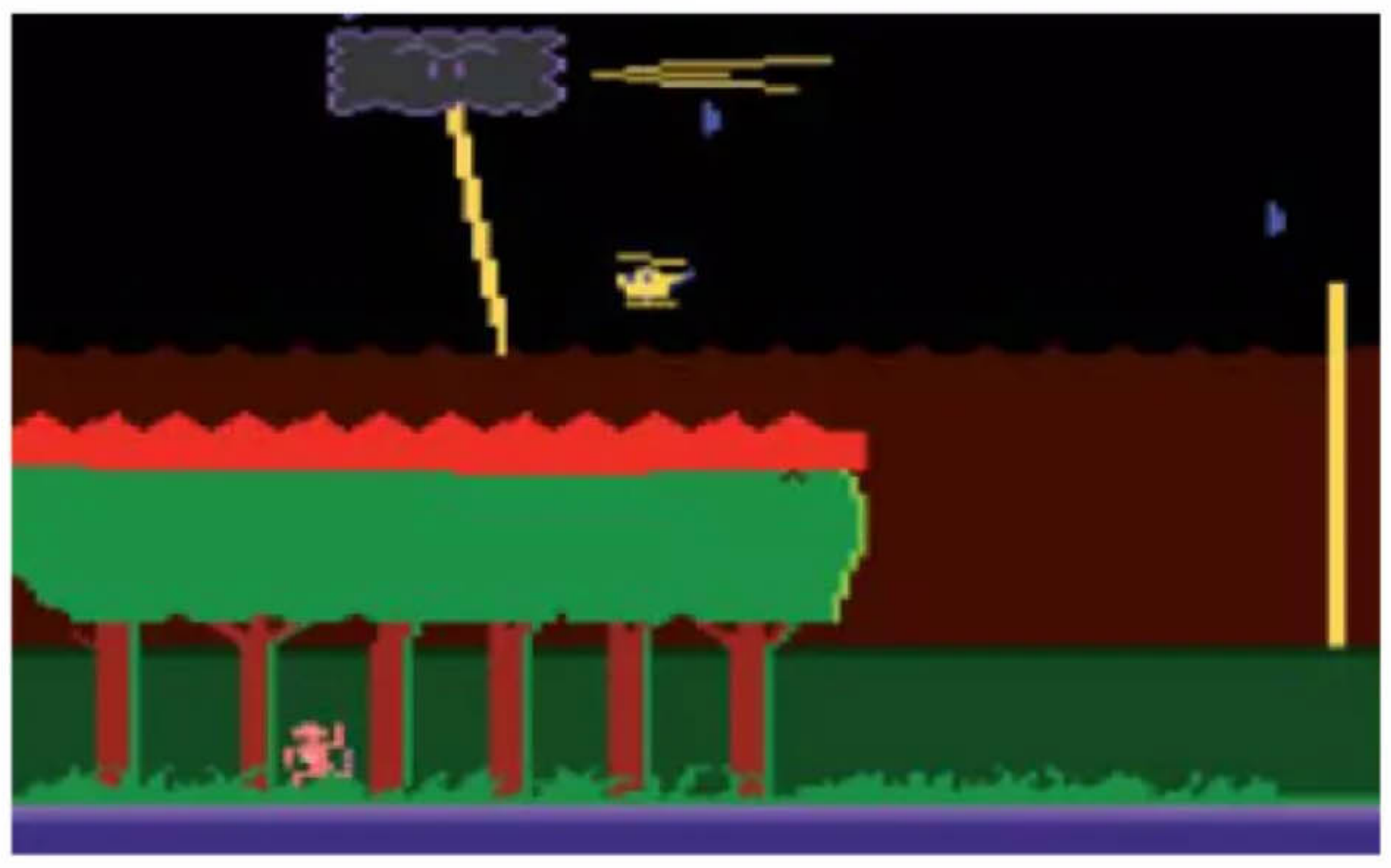
7 *Castle Crisis* is a homebrew game by veteran programmer Bryan Edewaard, and fans of the multiplayer coin-op favourite *Warlords* will be happy to learn this is a graphically arcade perfect port of that game, even though it doesn’t share the same name as Atari’s superb coin-op. Which you would expect considering the arcade version ran on virtually identical hardware. The Atari 5200’s analogue controllers are simply perfect for the precision needed to break out a pair of spinners, which is a problem that plagued many of the earlier ports of this game when it appeared on other home consoles.



ADVENTURE II

» RELEASED: 2007 » PUBLISHED BY: SELF-PUB
» CREATED BY: RON LLOYD

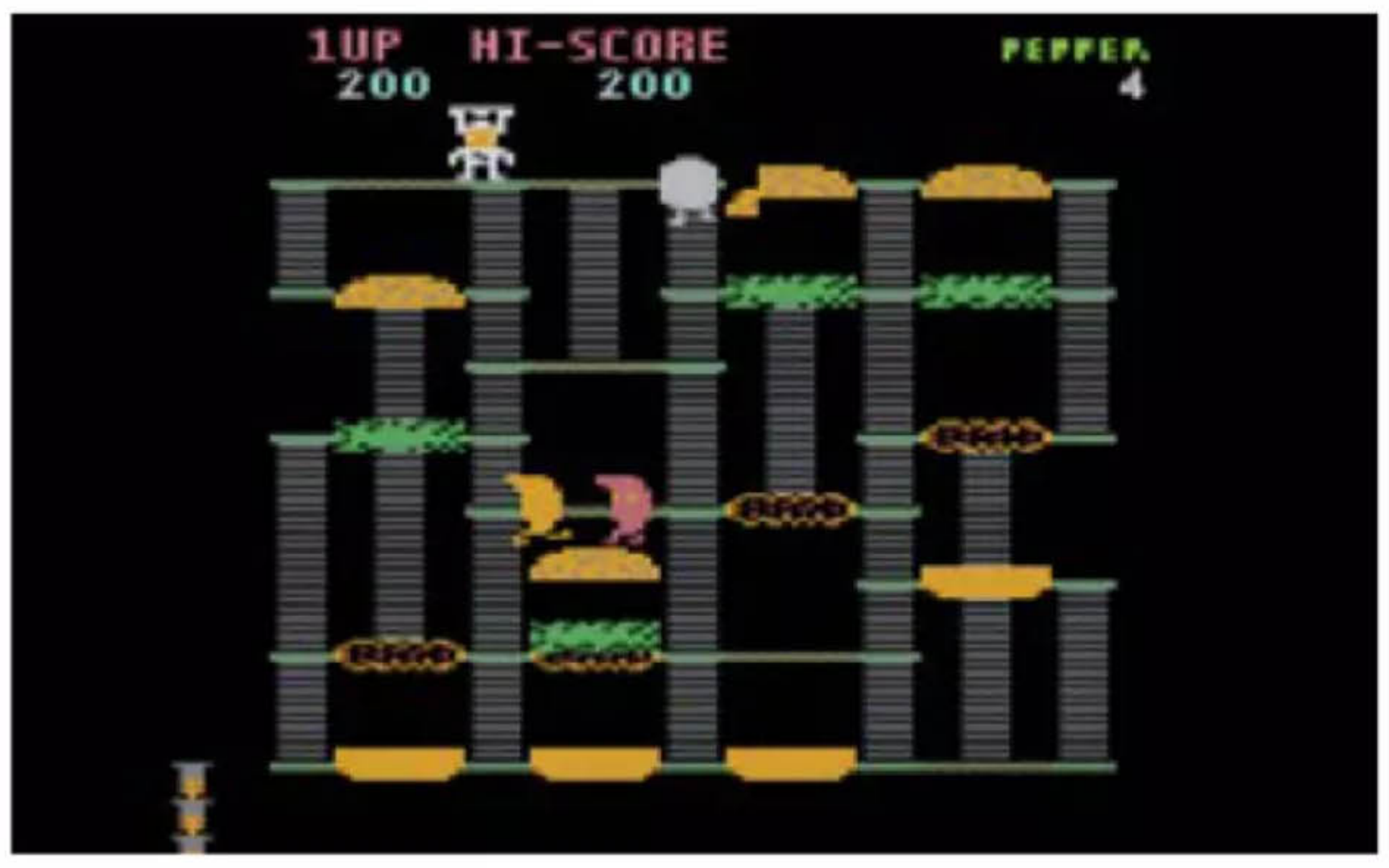
8 No, this isn’t like Dana Marschz’s Hamlet 2. Atari 5200 homebrewer extraordinaire Ron Lloyd managed to create a legitimate follow-up to the hit 2600 classic, to the point of Atari giving its blessing in exchange for using it to create a scaled-down 2600 version for their Flashback 2 console. Keeping the fun gameplay of the original but vastly updating the graphics, *Adventure II* also includes plenty of new locations and foes to test you. It’s worth it to pick it up for the beautiful graphics alone, but the additional updates and expansions make this a fantastic game for the 5200. An essential addition to any collection.



KOFFI: YELLOW KOPTER

» RELEASED: 2002 » PUBLISHED BY: SELF-PUB
» CREATED BY: RON LLOYD

9 Another homebrew classic by Ron Lloyd, this is a completely original game featuring a cartoonish yellow helicopter. Like a chopper version of Rudolph the Red Nosed Reindeer, Koffi is not allowed to go with the bigger rescue ‘kopters’ on missions. But when he learns of an insidious plan by Pyro the Storm Cloud to burn down the forests, Koffi flies into action to protect the woodland and the animals that live there. In a take on US Games’ ‘Name This Game’ contest for its 2600 game release in 1982, AtariAge forum members were allowed to enter a contest to design one of the animals appearing in the game. This needs to be owned.



BEEF DROP

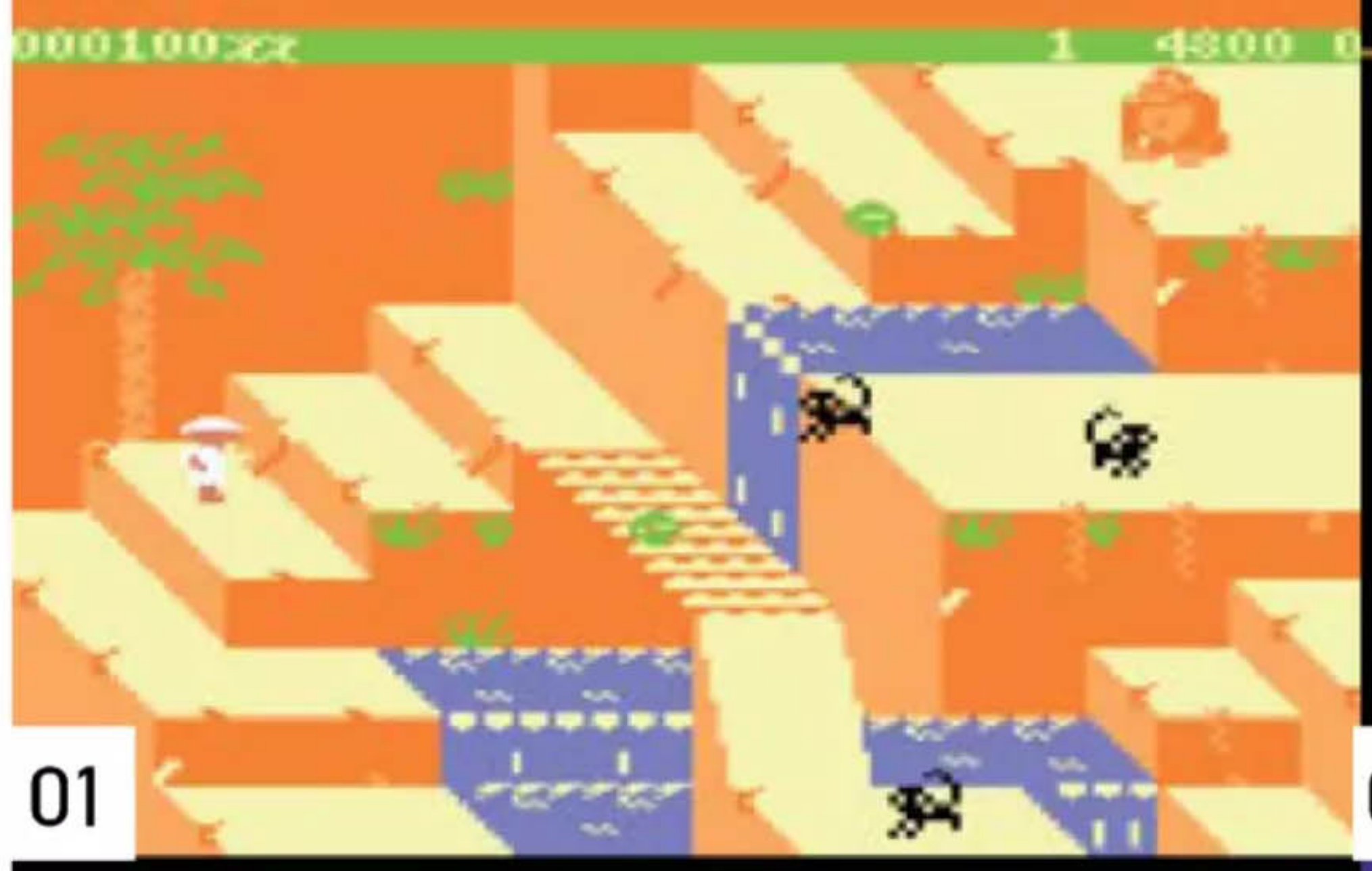
» RELEASED: 2004 » PUBLISHED BY: SELF-PUB
» CREATED BY: KEN SIDERS

10 Mattel was responsible for porting Data East’s coin-op classic *Burger Time* to the Intellivision (which is considered an excellent port), and its M-Network Publishing ported it to the Atari 2600, Apple II, and IBM PC. Unfortunately, the 5200 had zero chef love, which was a real shame. Thanks to Ken Siders, however, burger-loving 5200 owners can now build them all day long. Initially unveiled under the guise of an April Fool’s joke surrounding a “found” prototype, Ken thankfully soon revealed that he had coded it up and was soon looking to publish it as the complete game. *Beef Drop* is the excellent end result.

ATARI 5200
AND THE REST…

The Atari 5200's library of games may be small, but there are still plenty of great arcade conversions and original games to discover on it

Screenshots courtesy of www.atariage.com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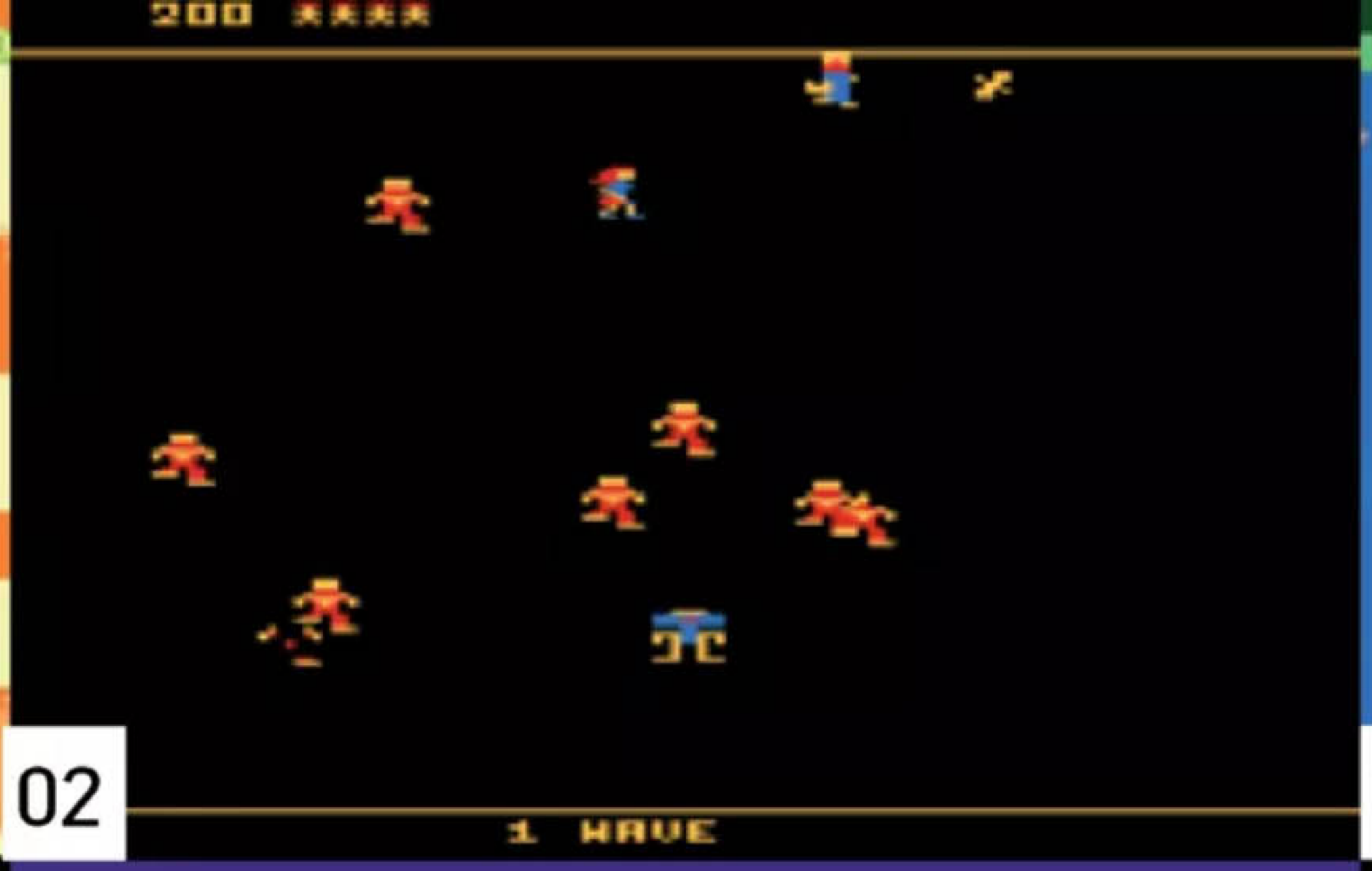
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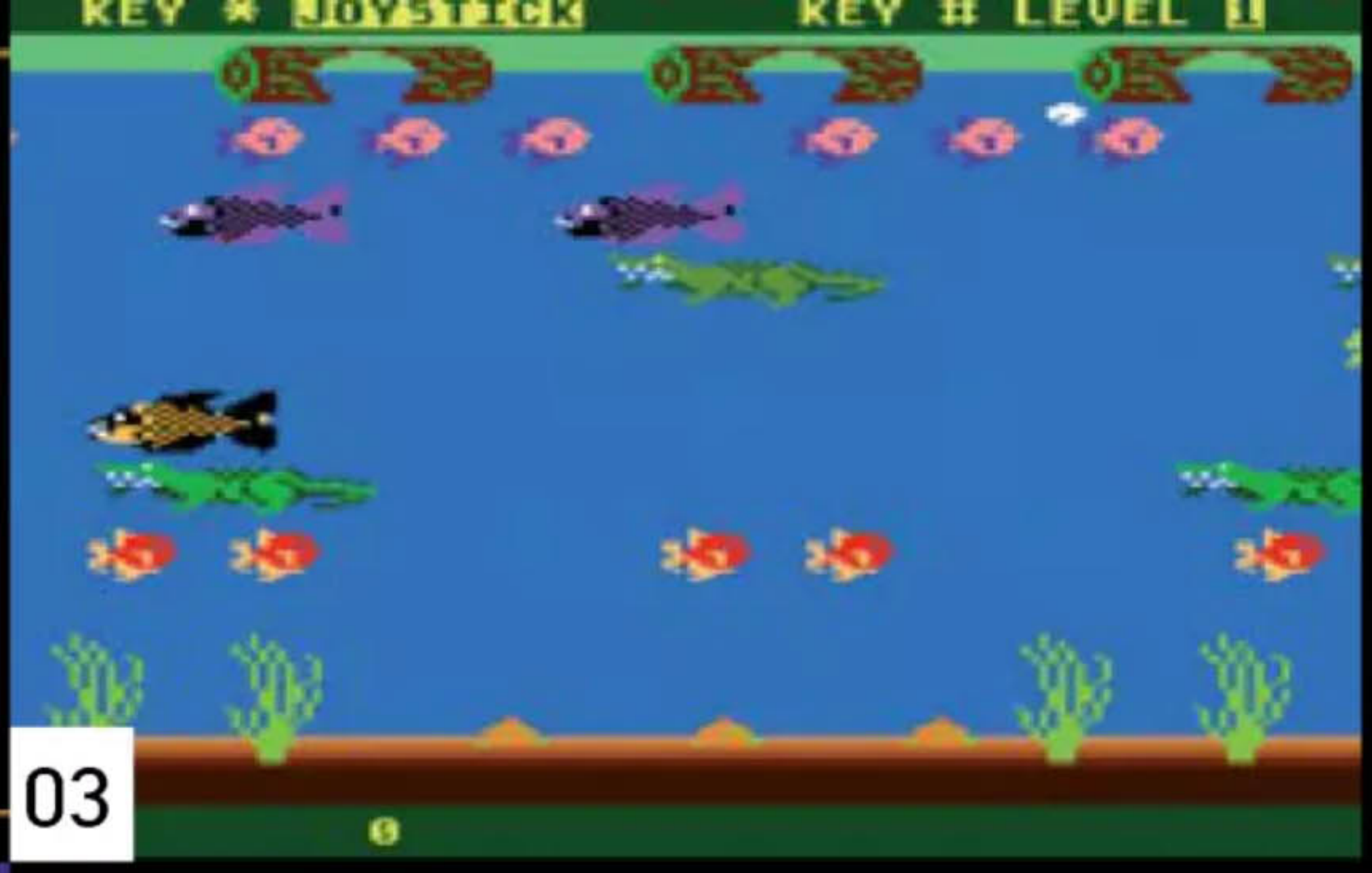
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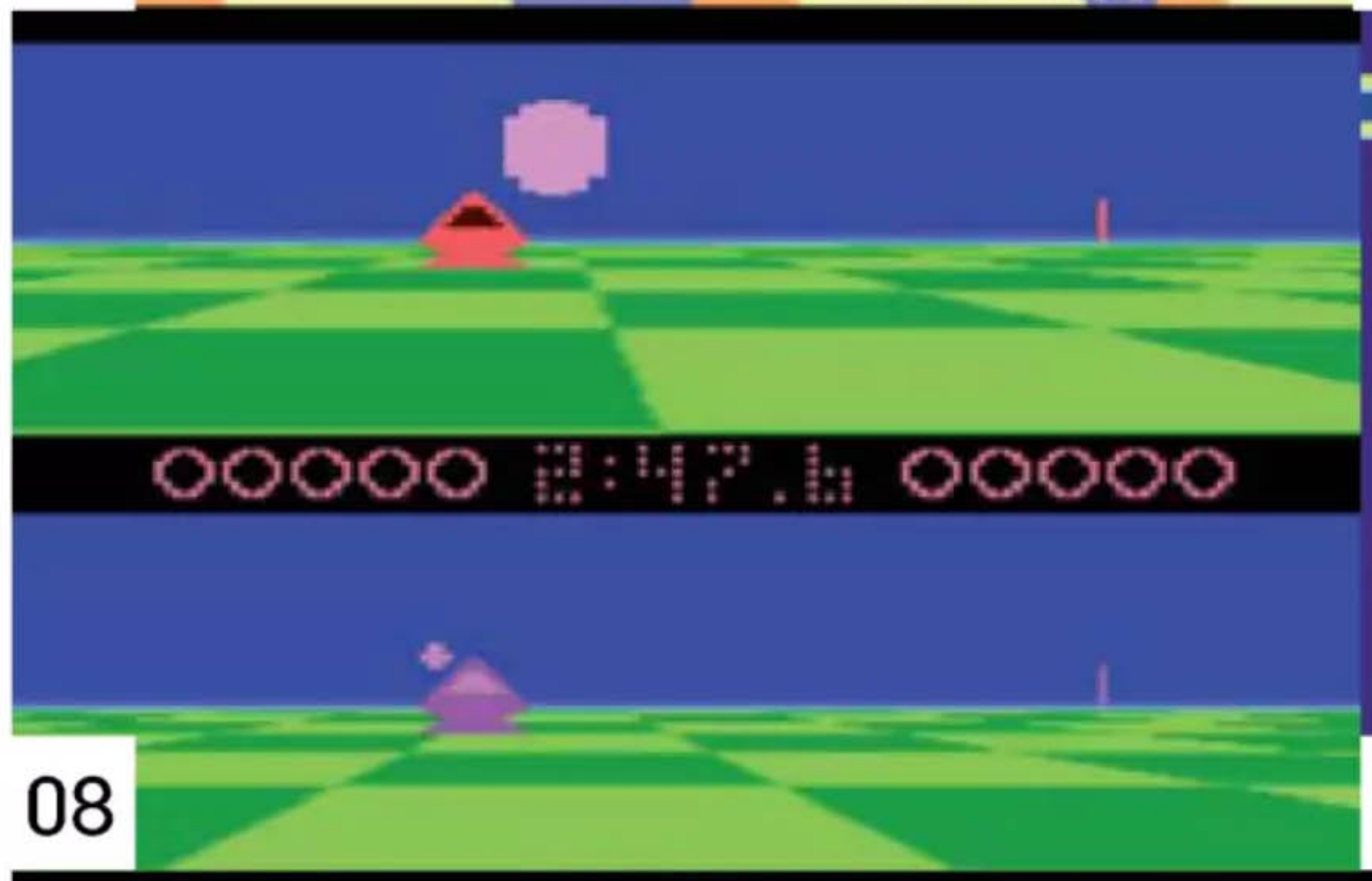
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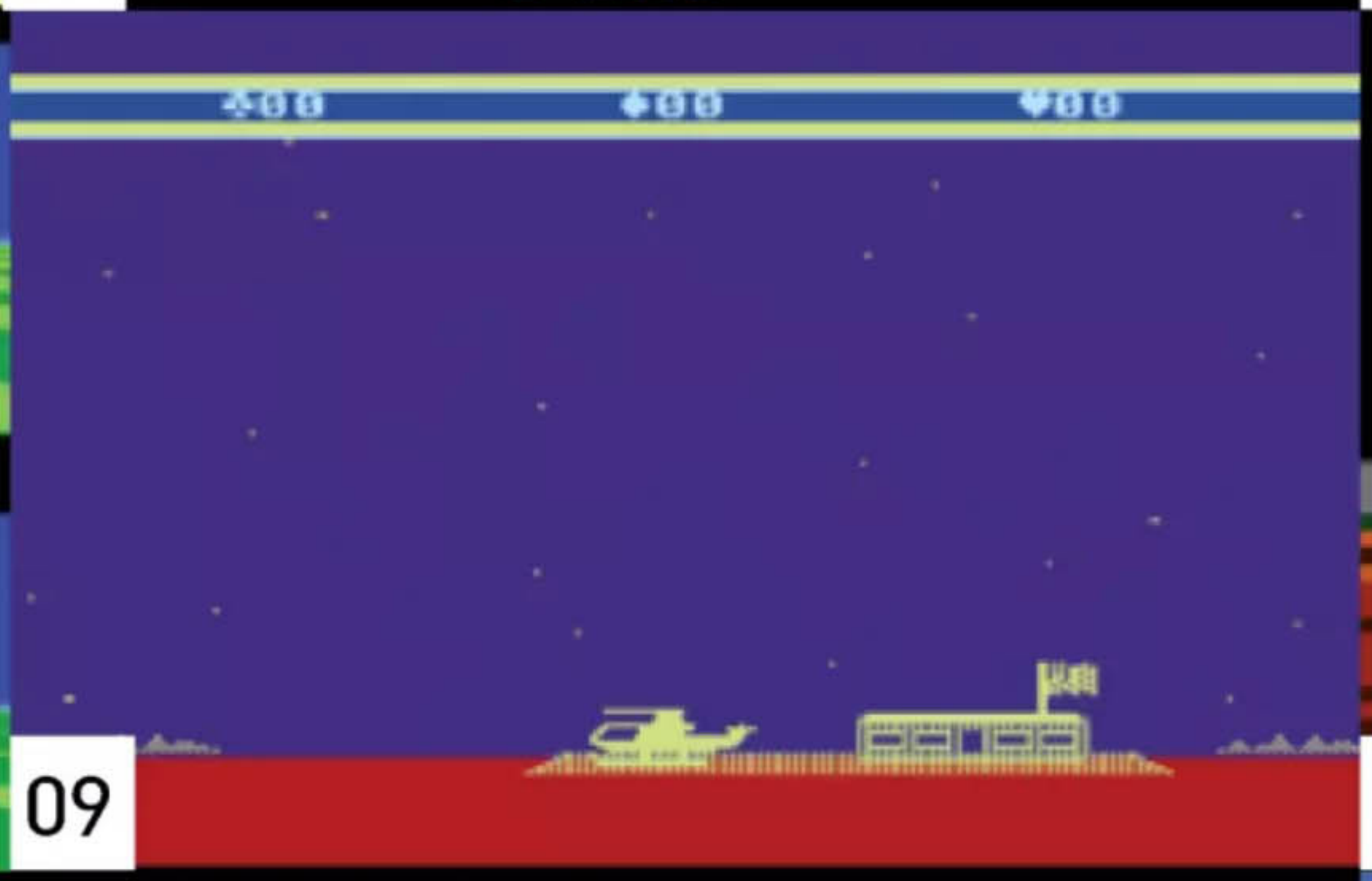
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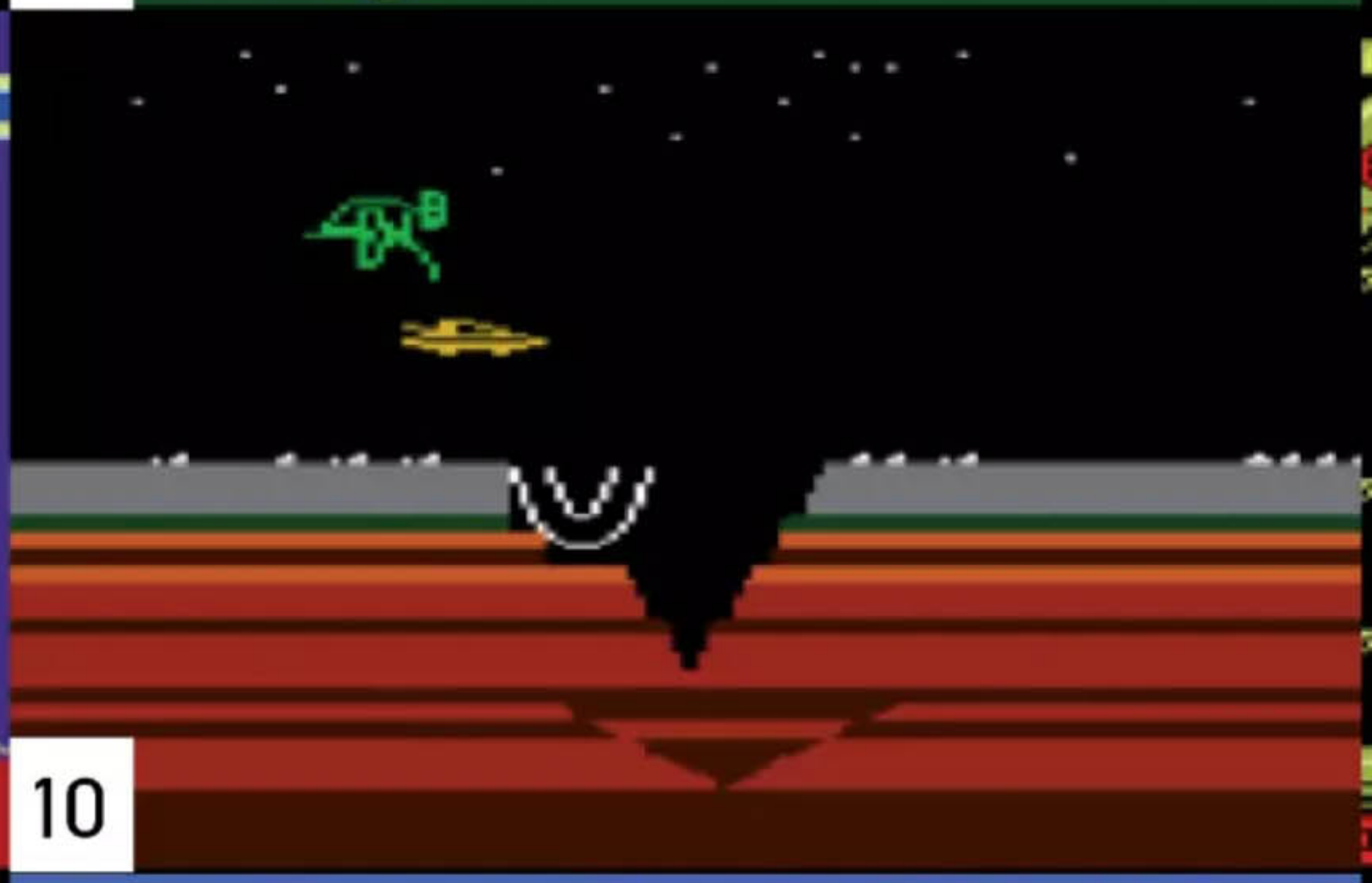
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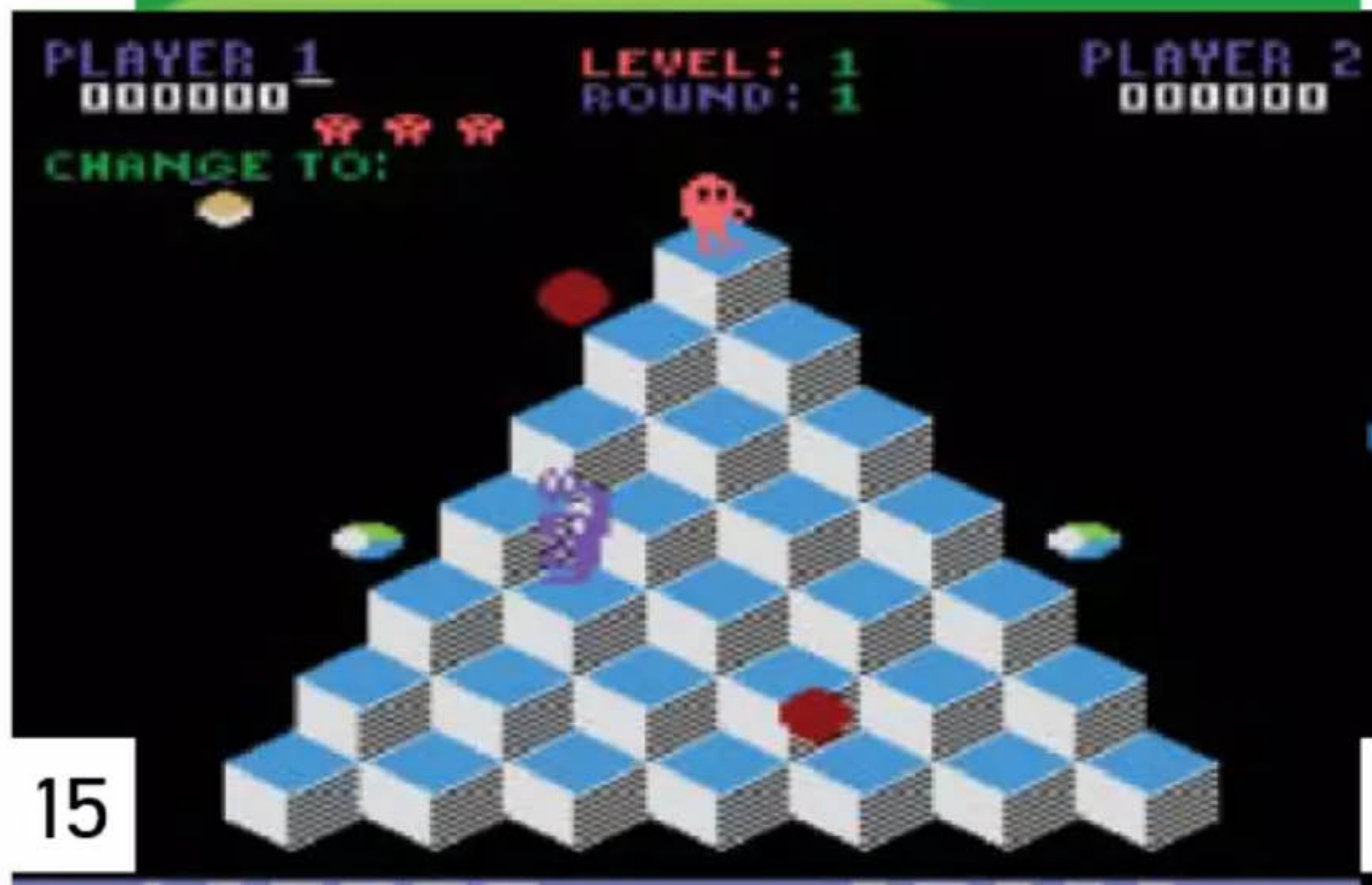
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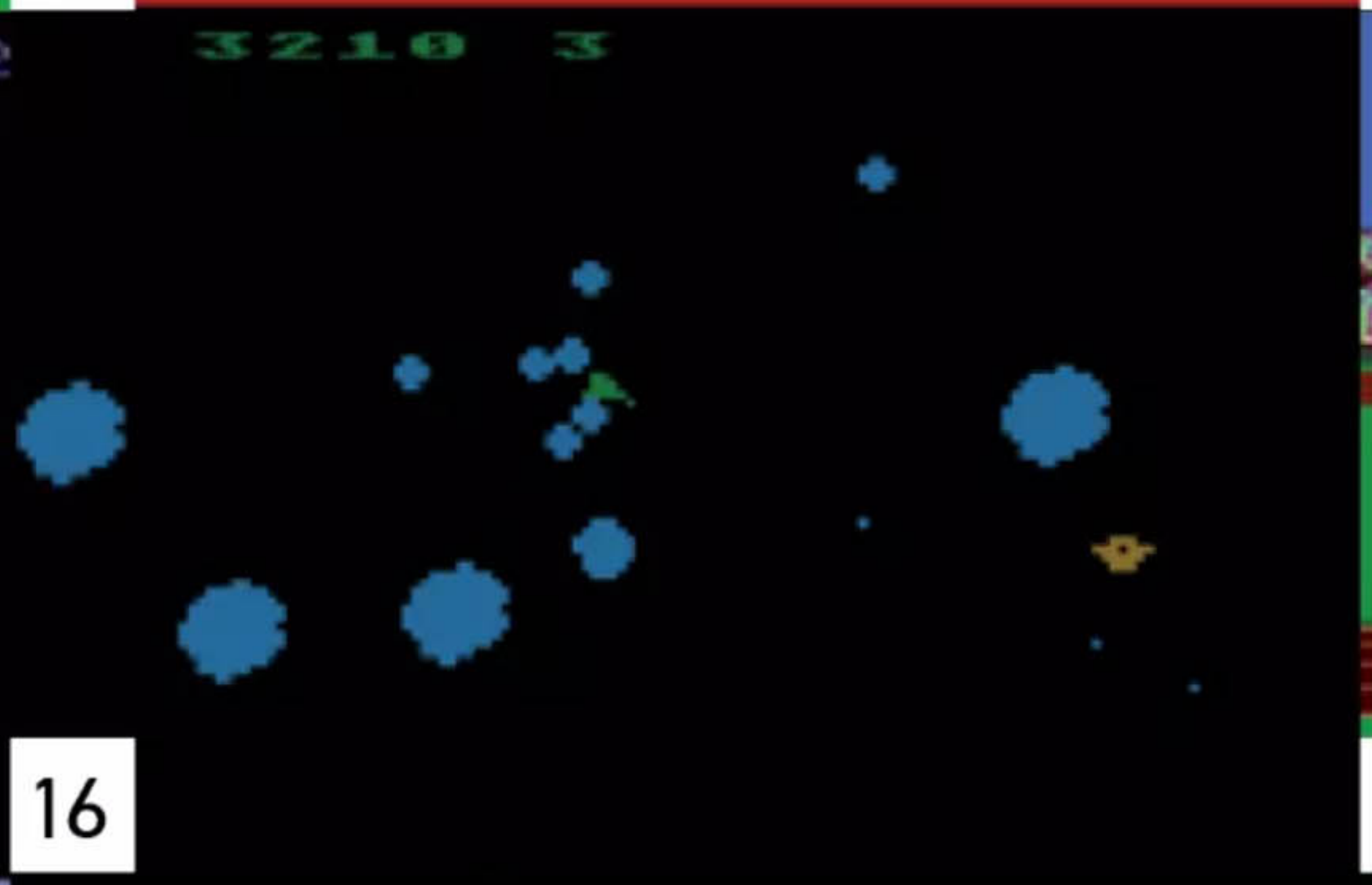
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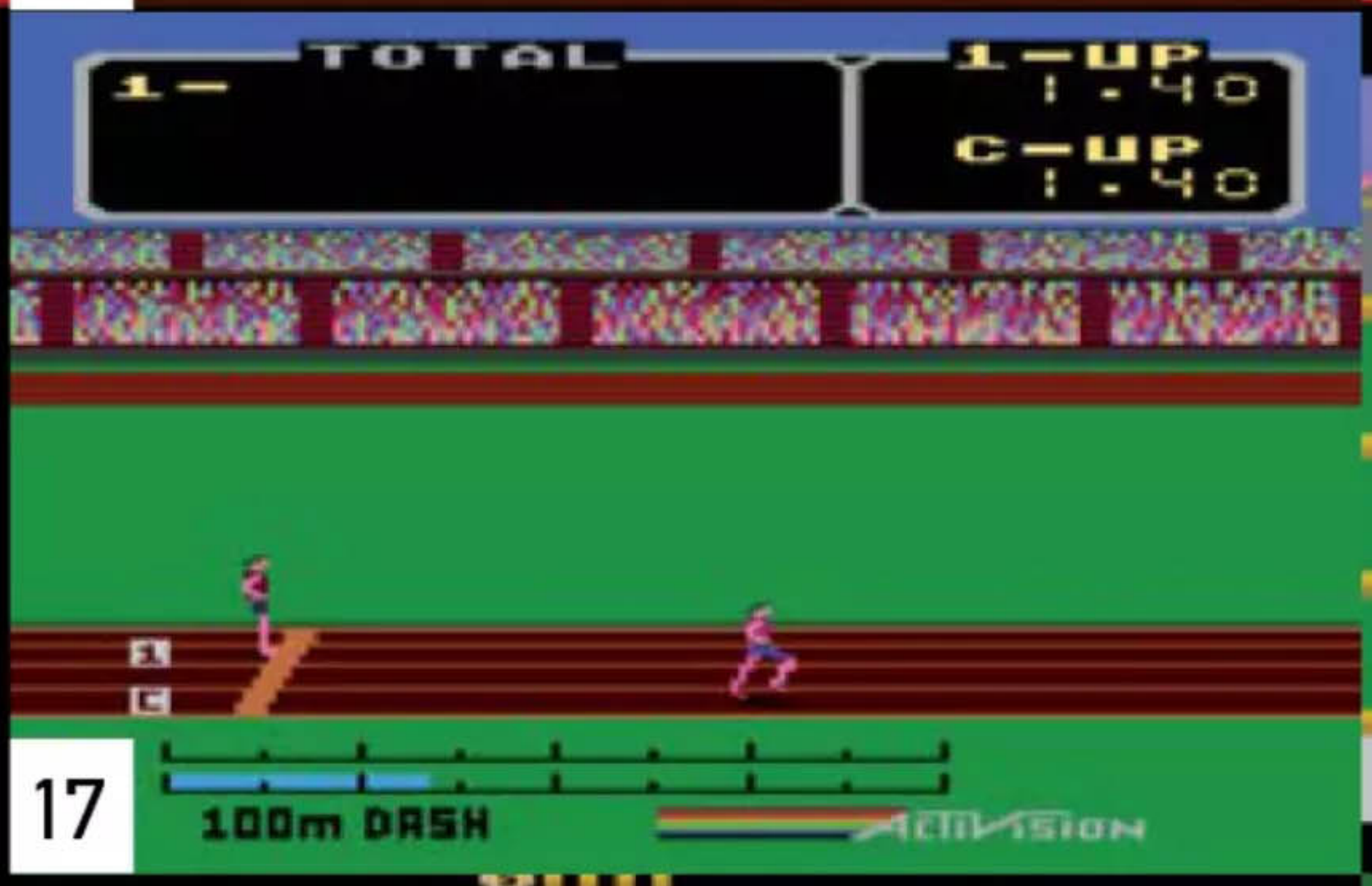
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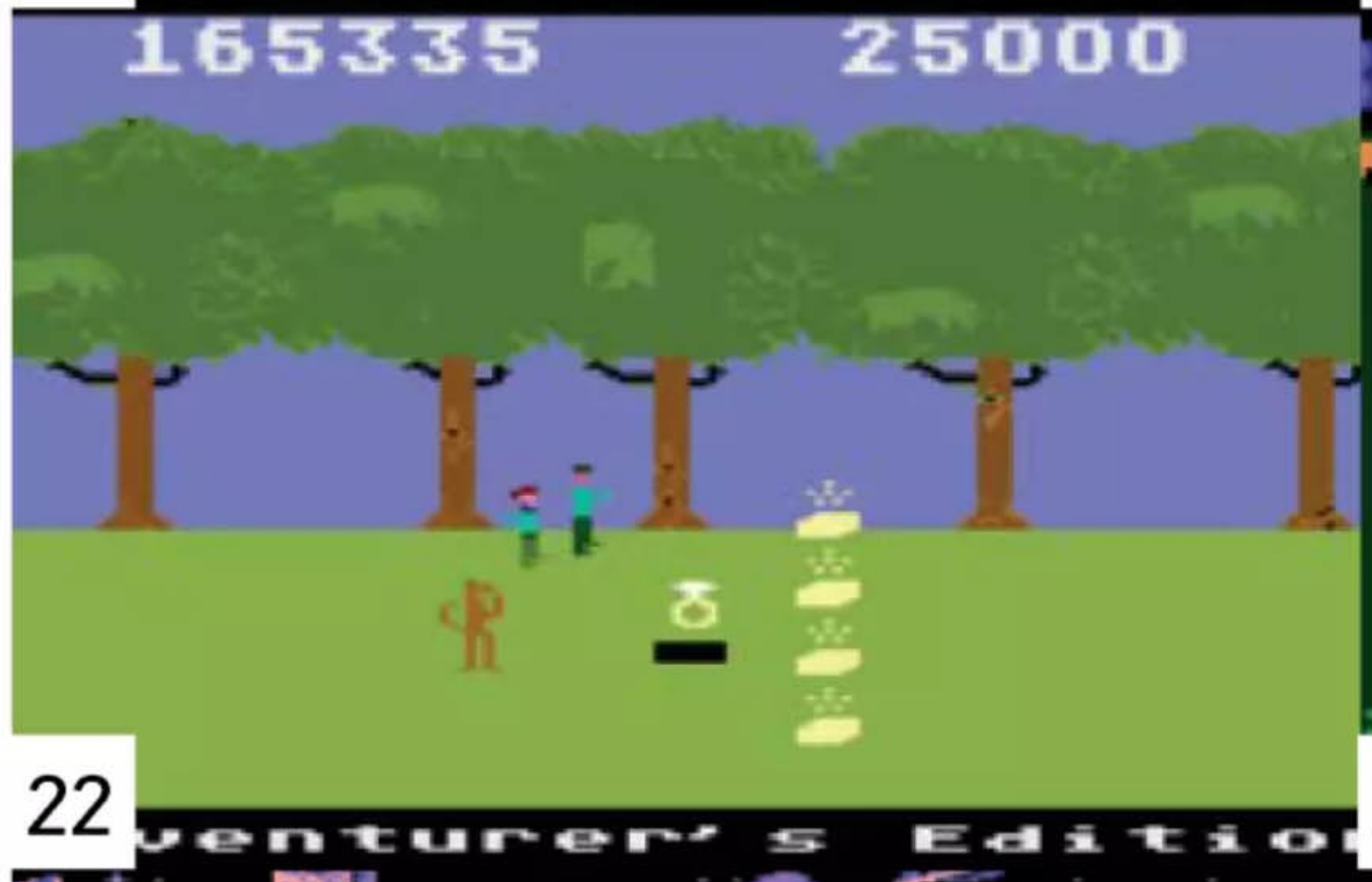
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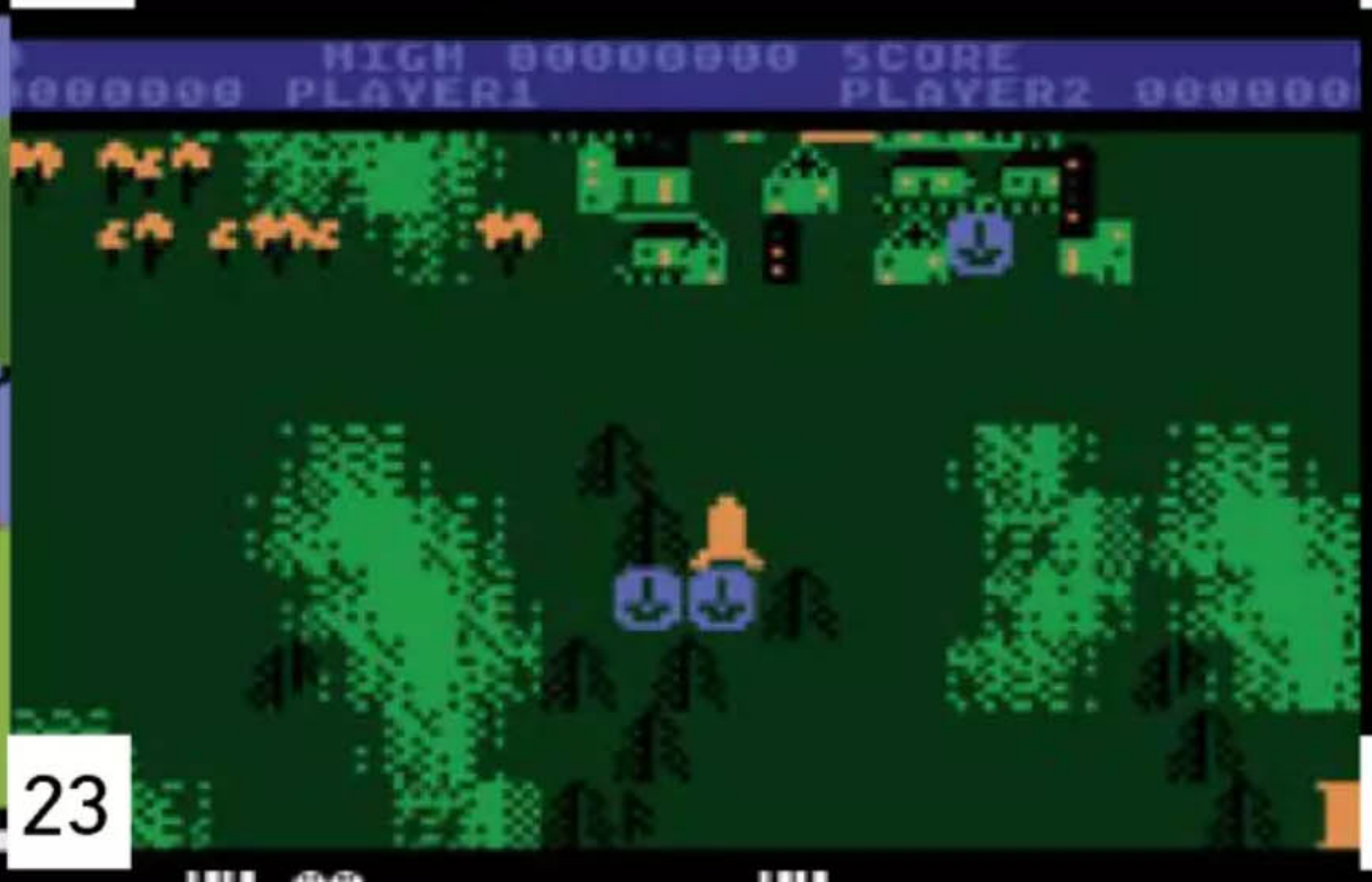
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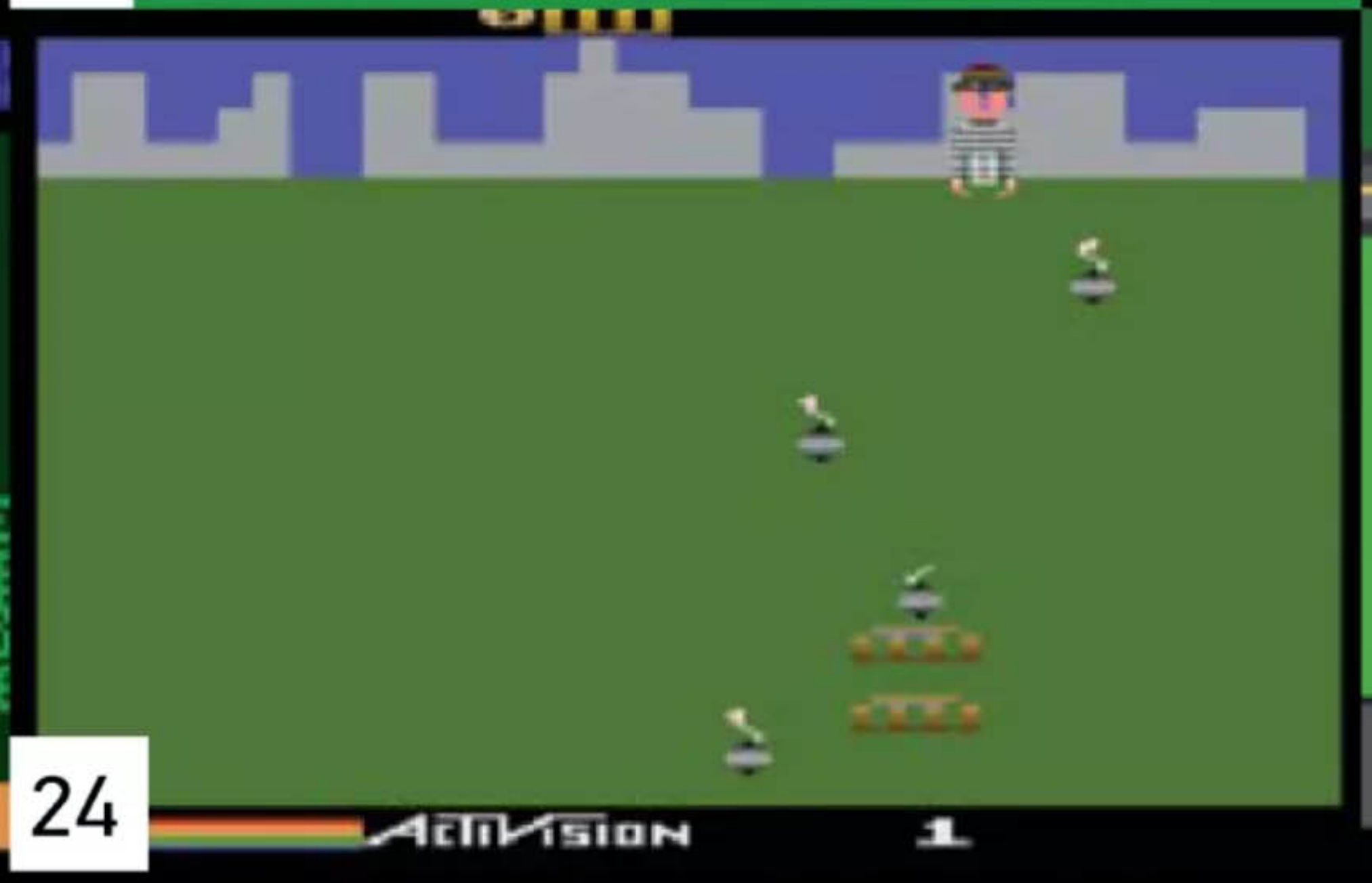
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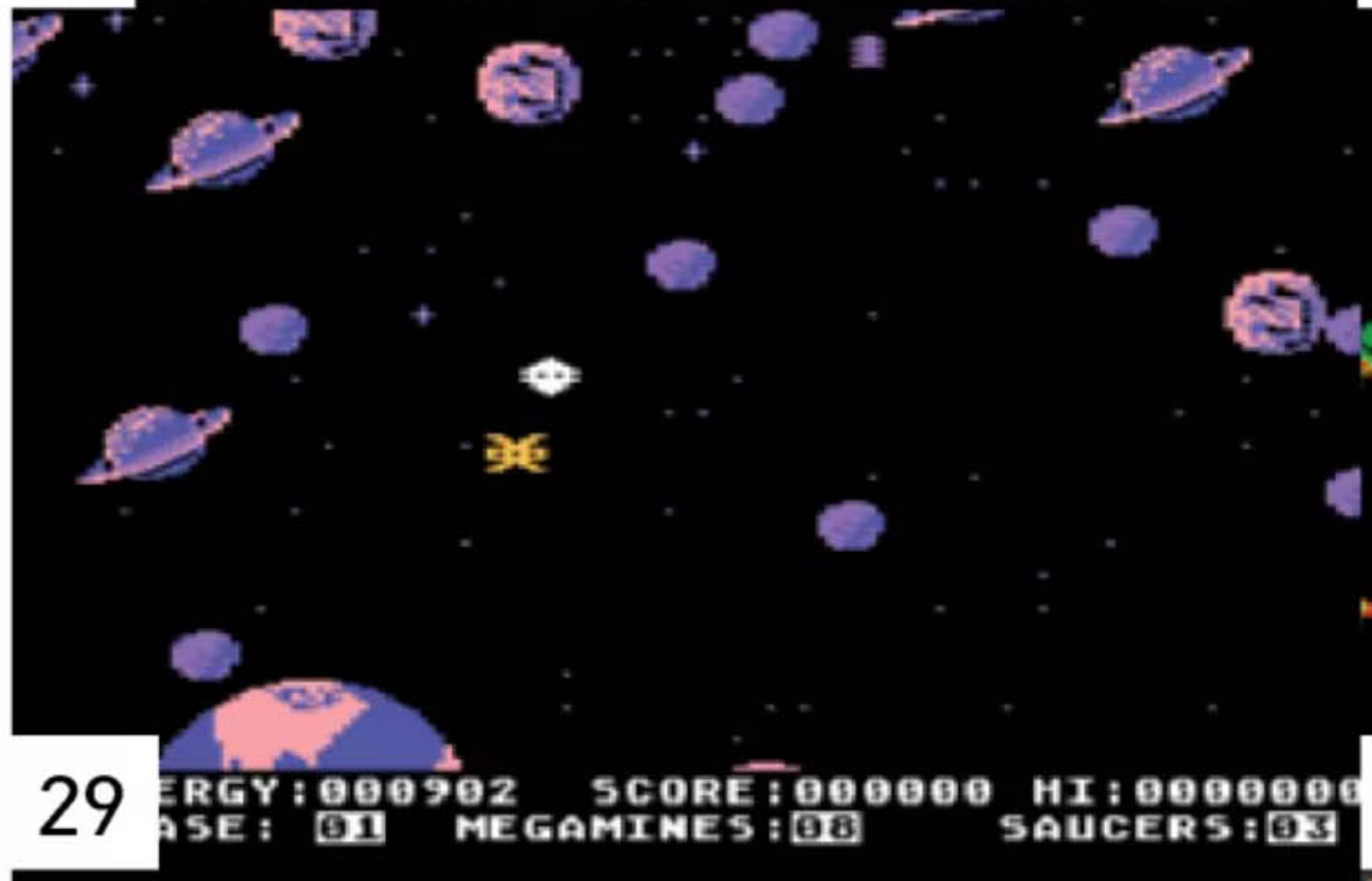
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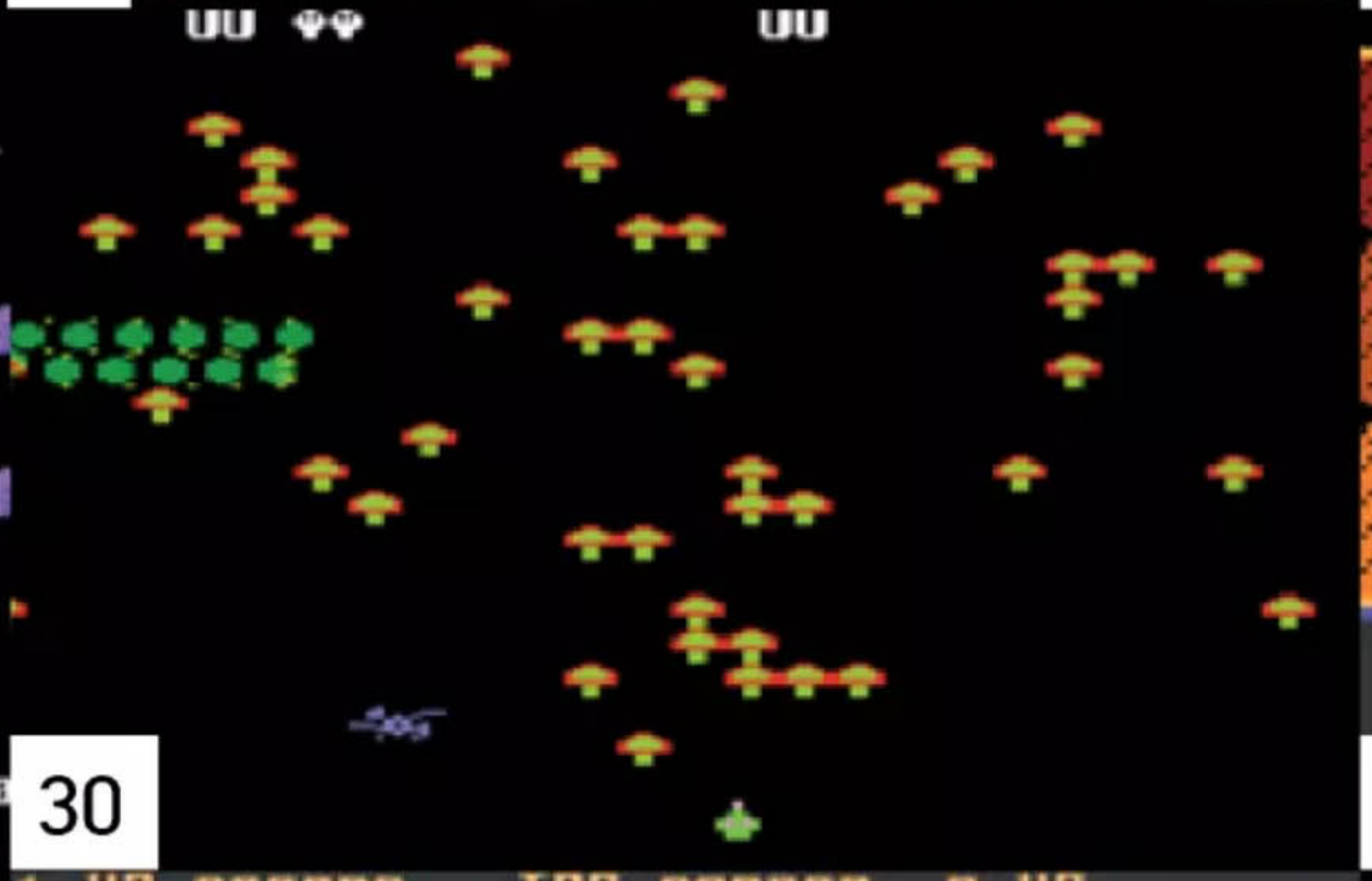
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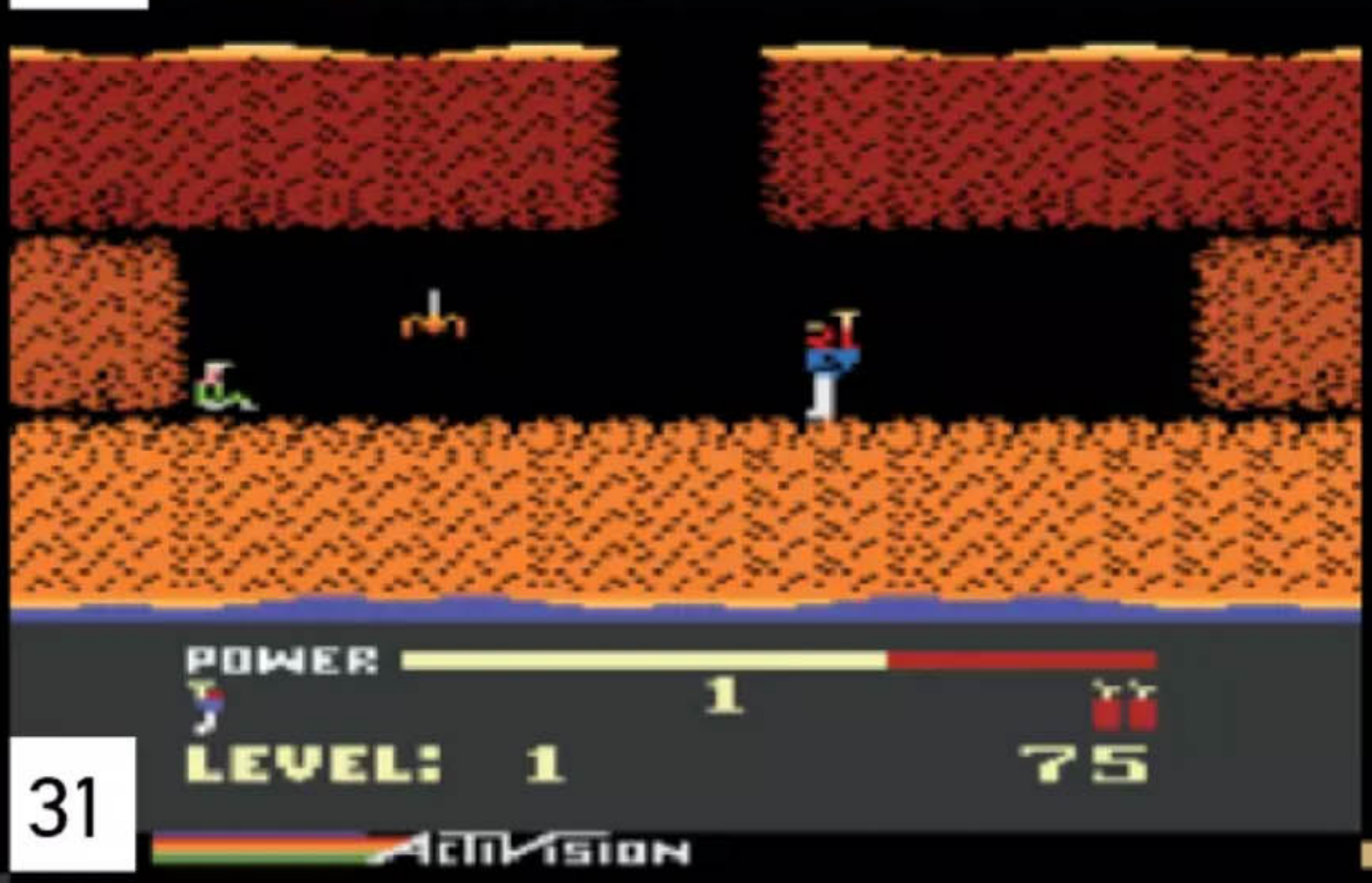
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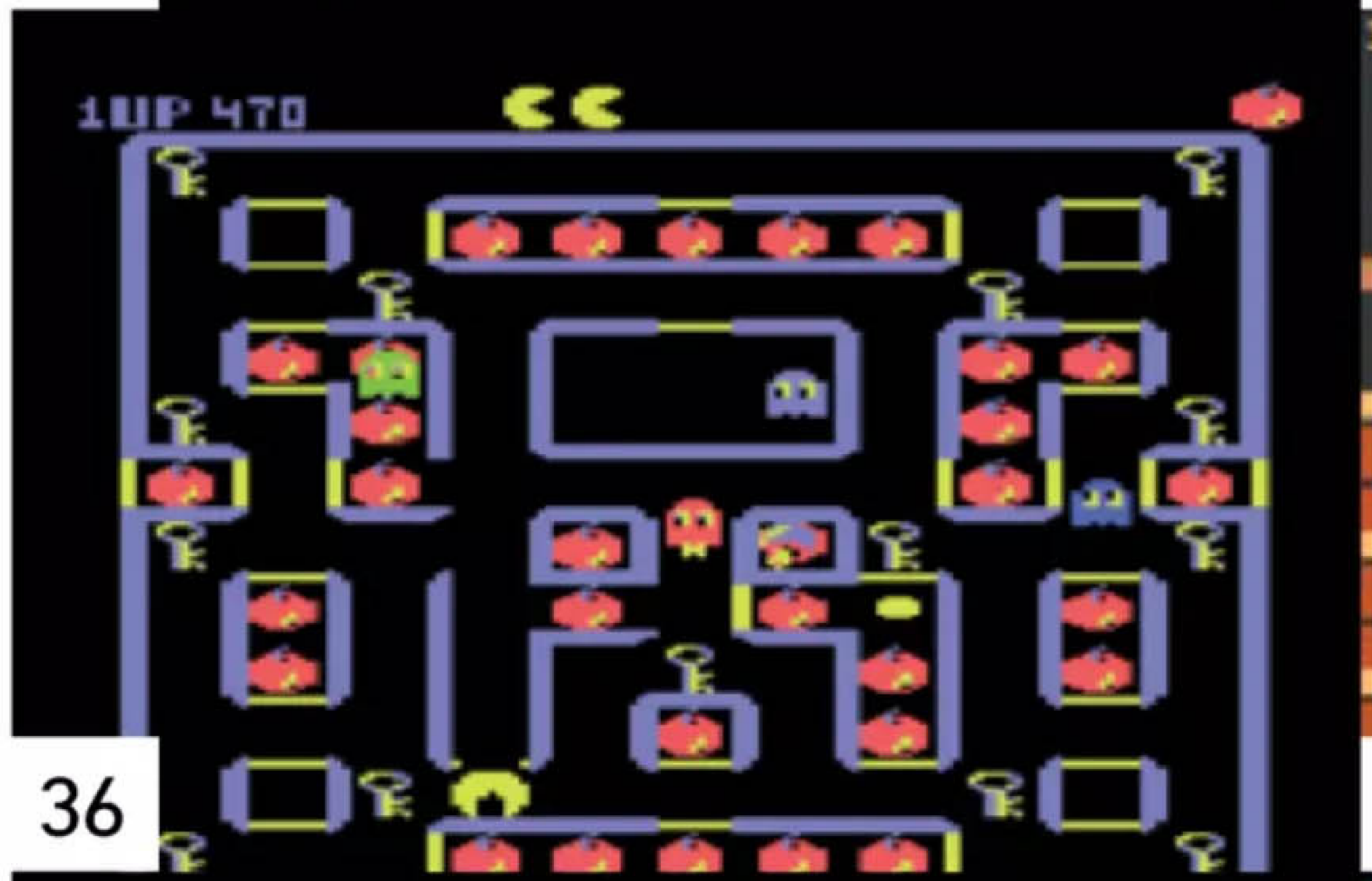
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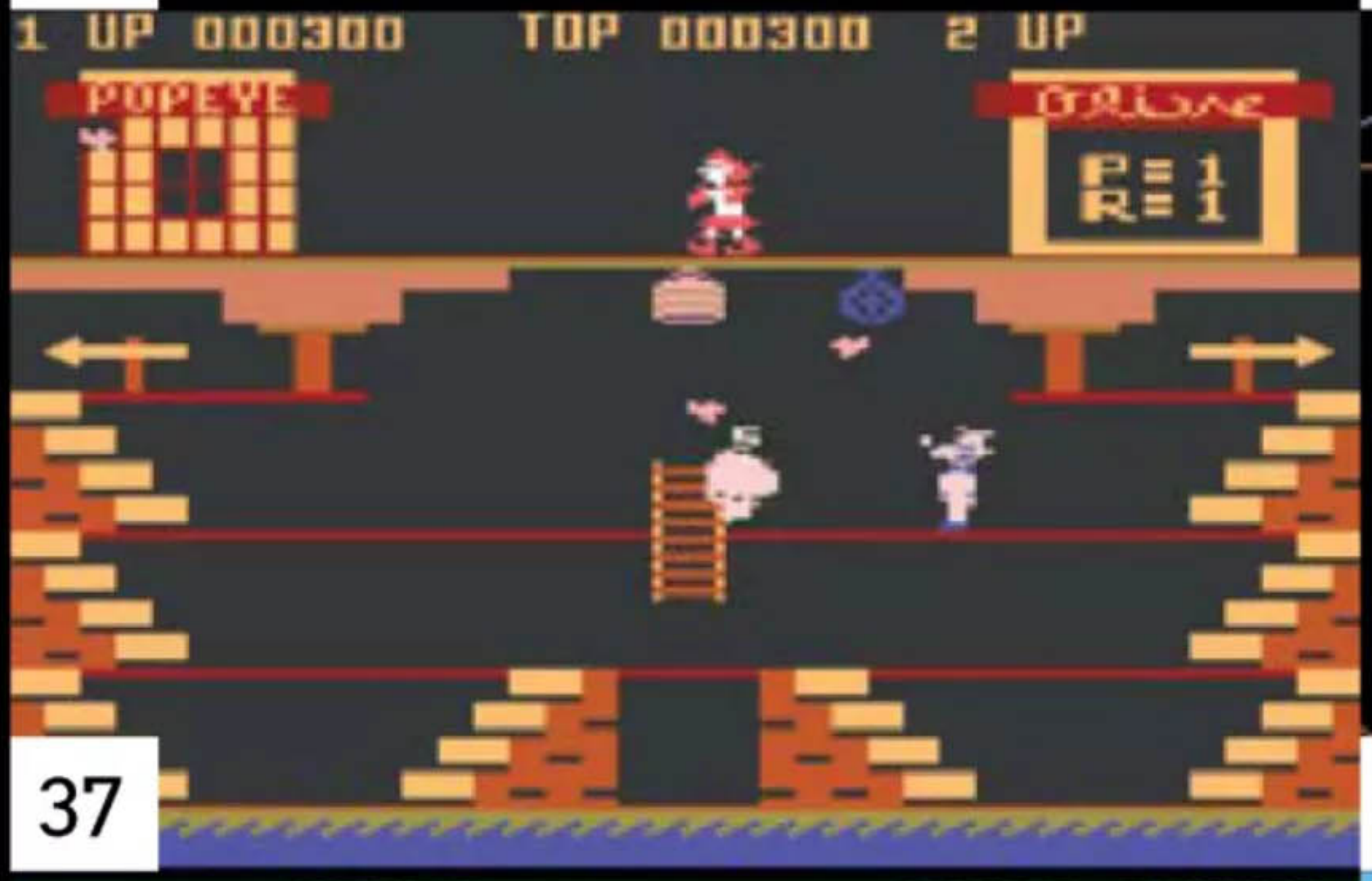
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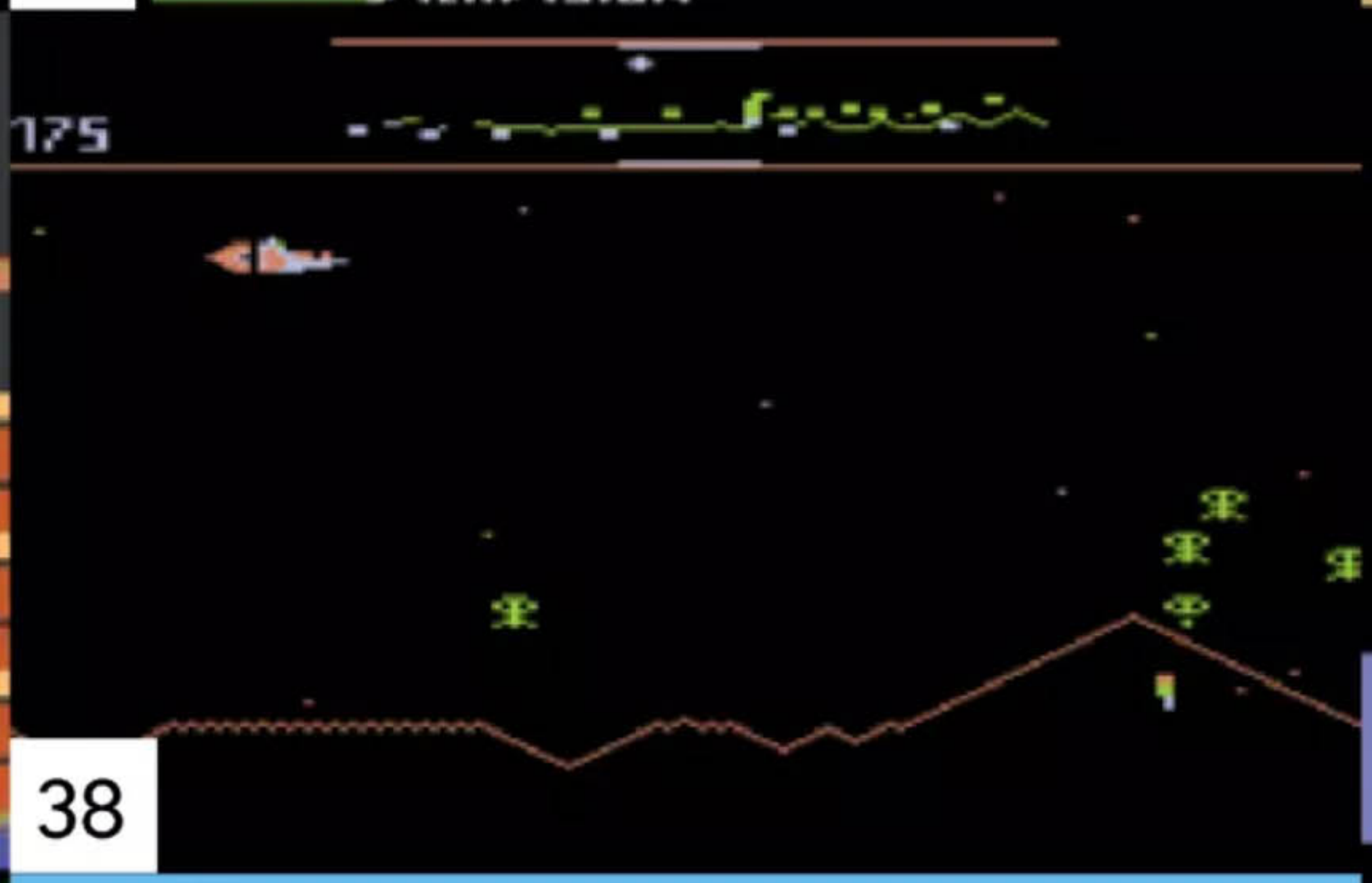
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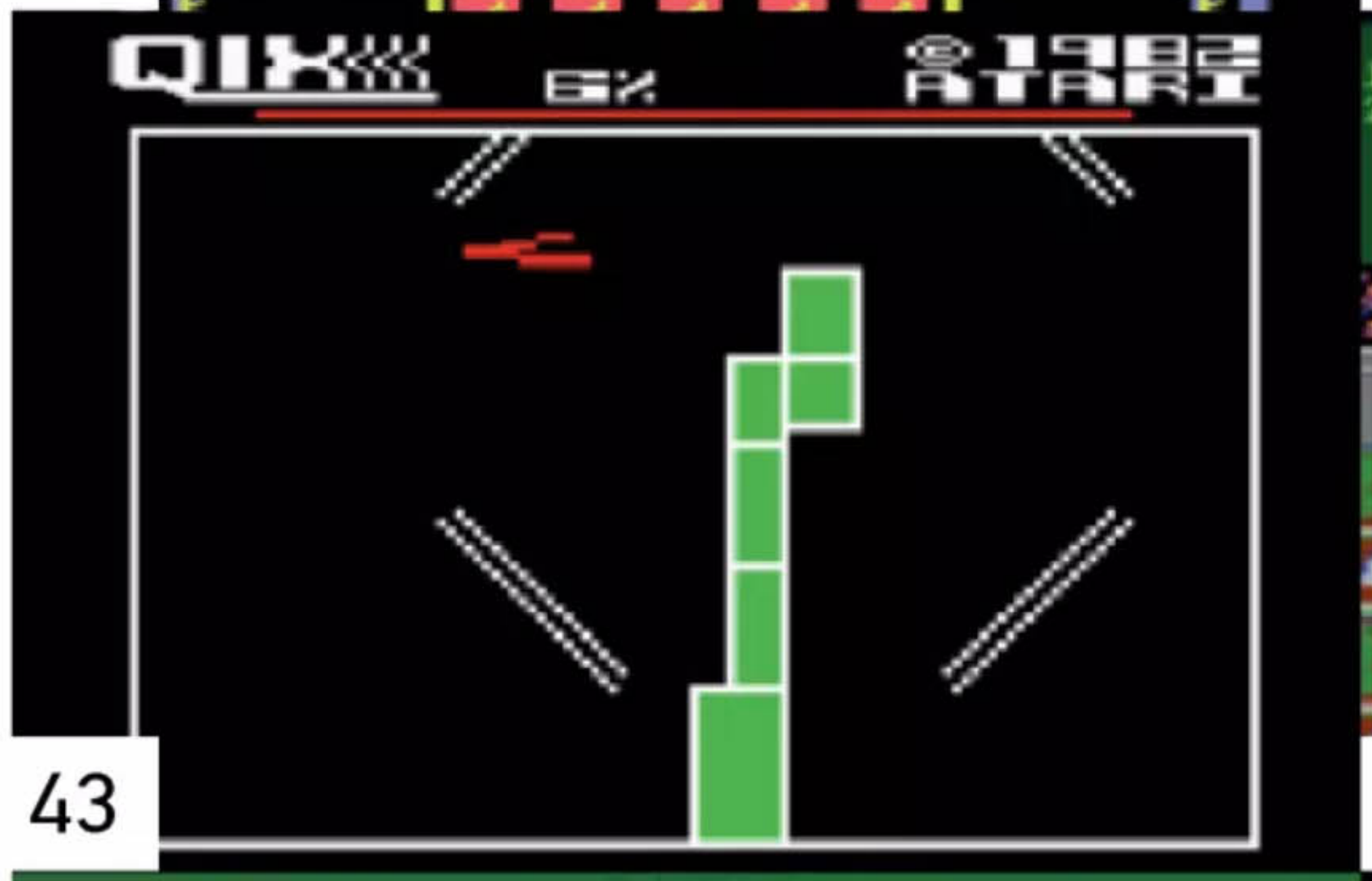
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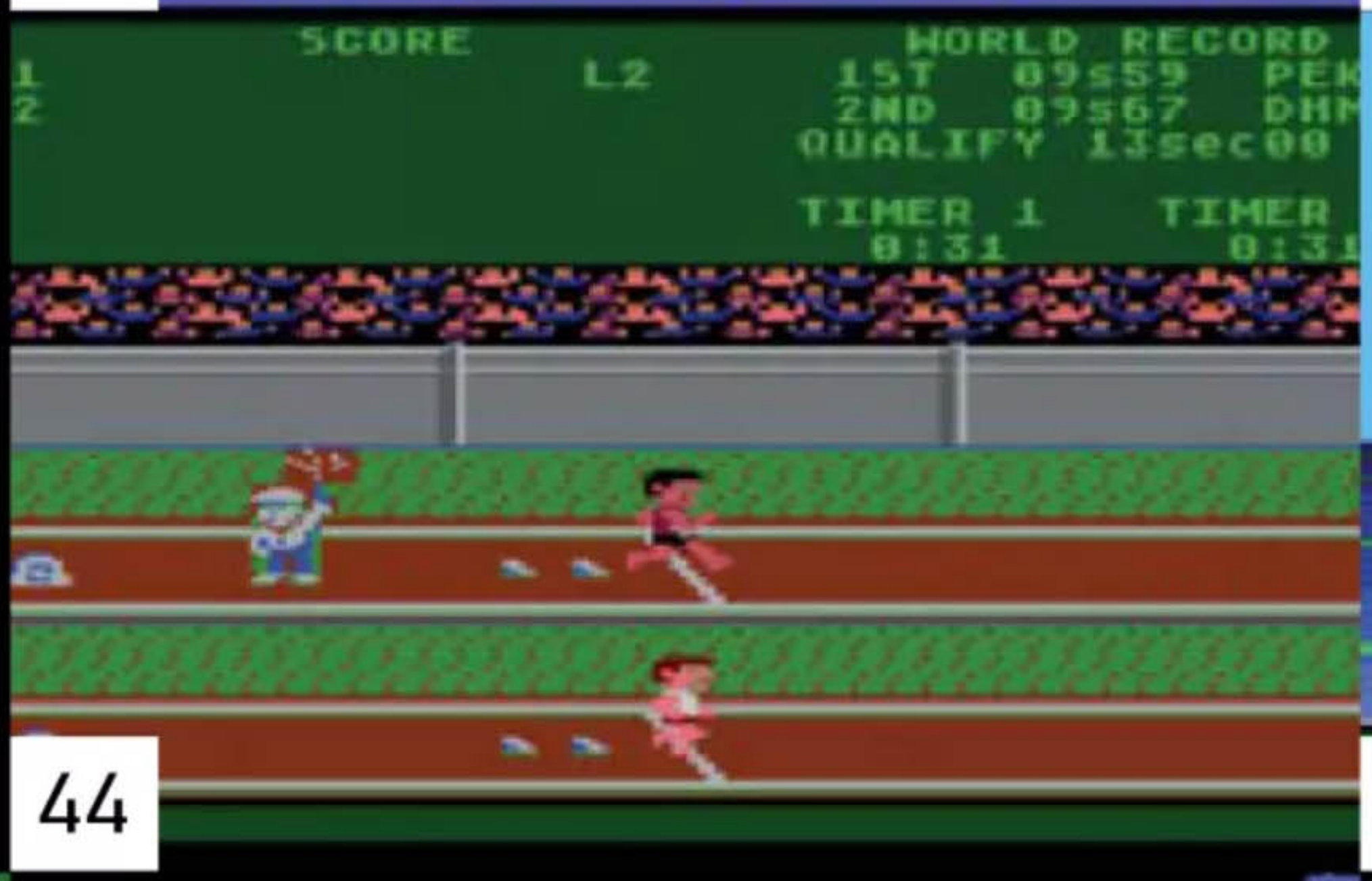
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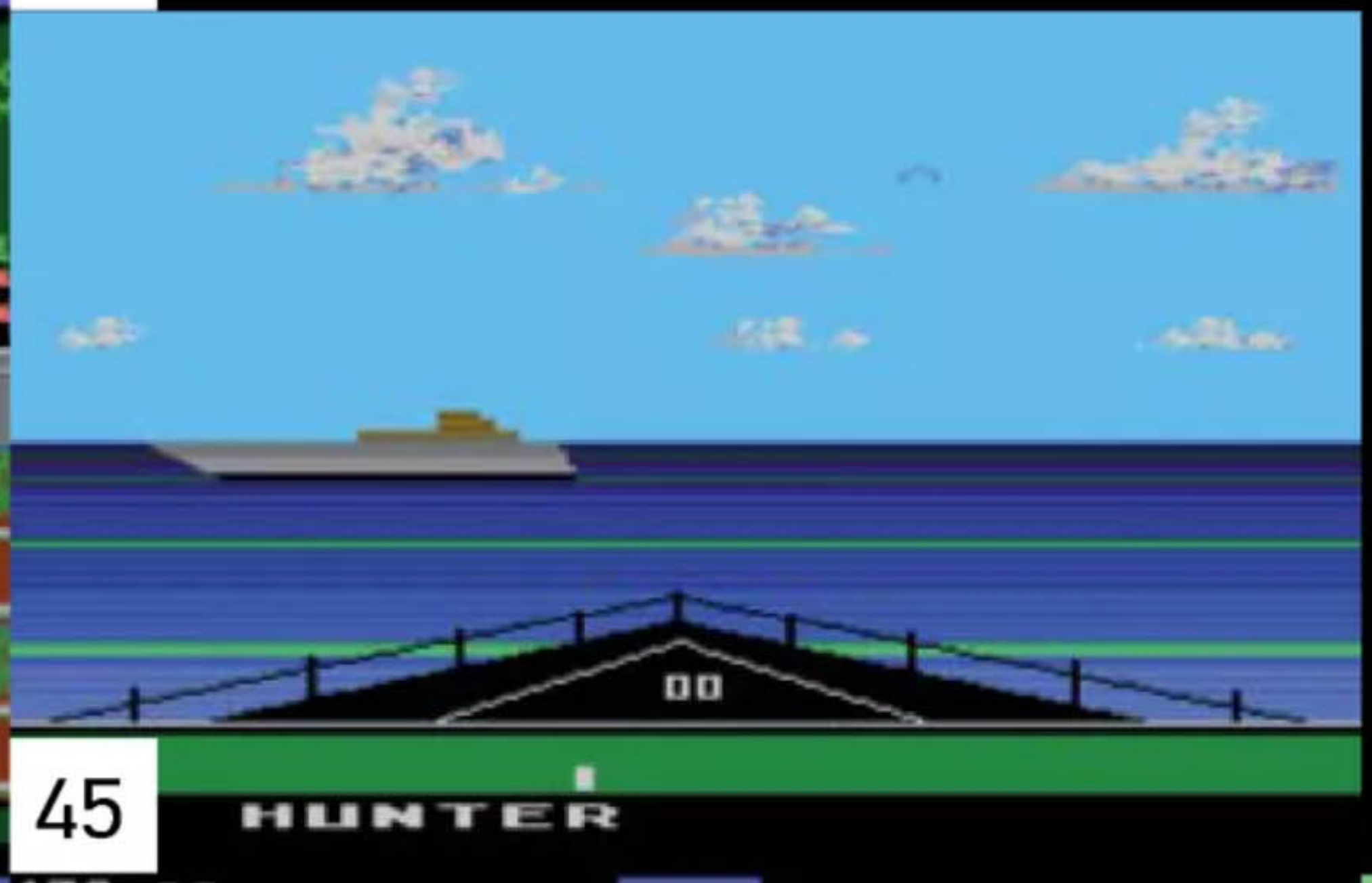
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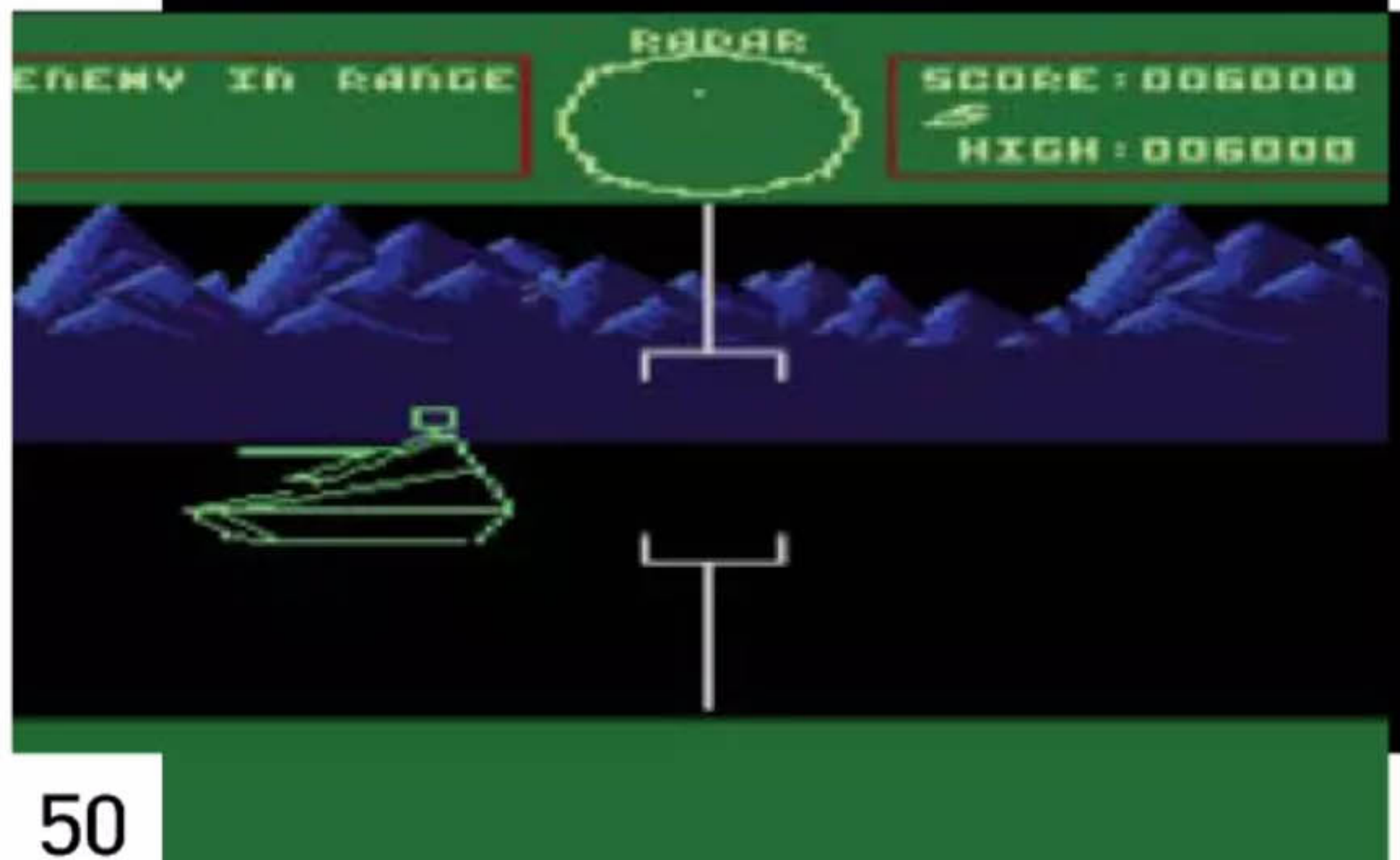
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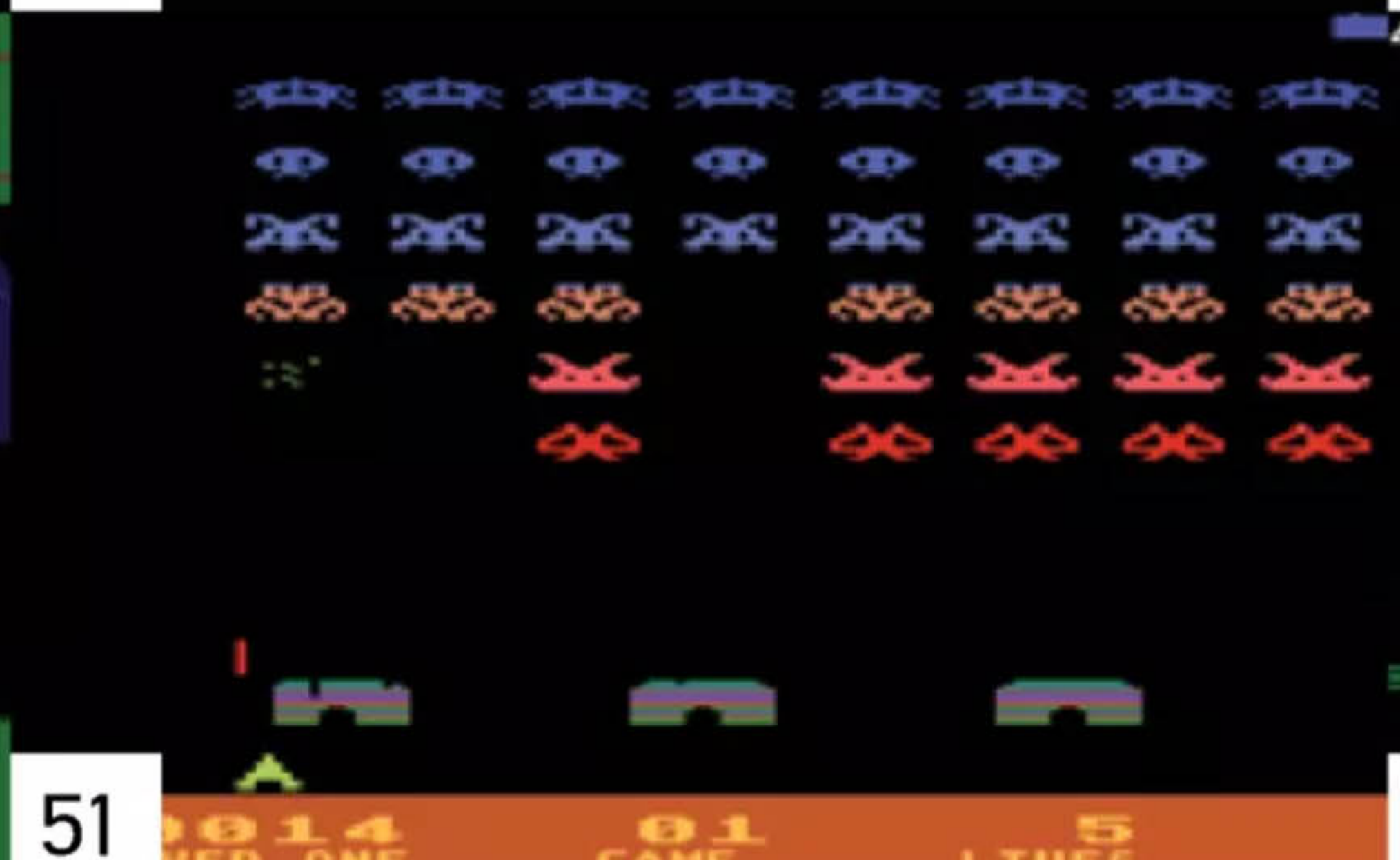
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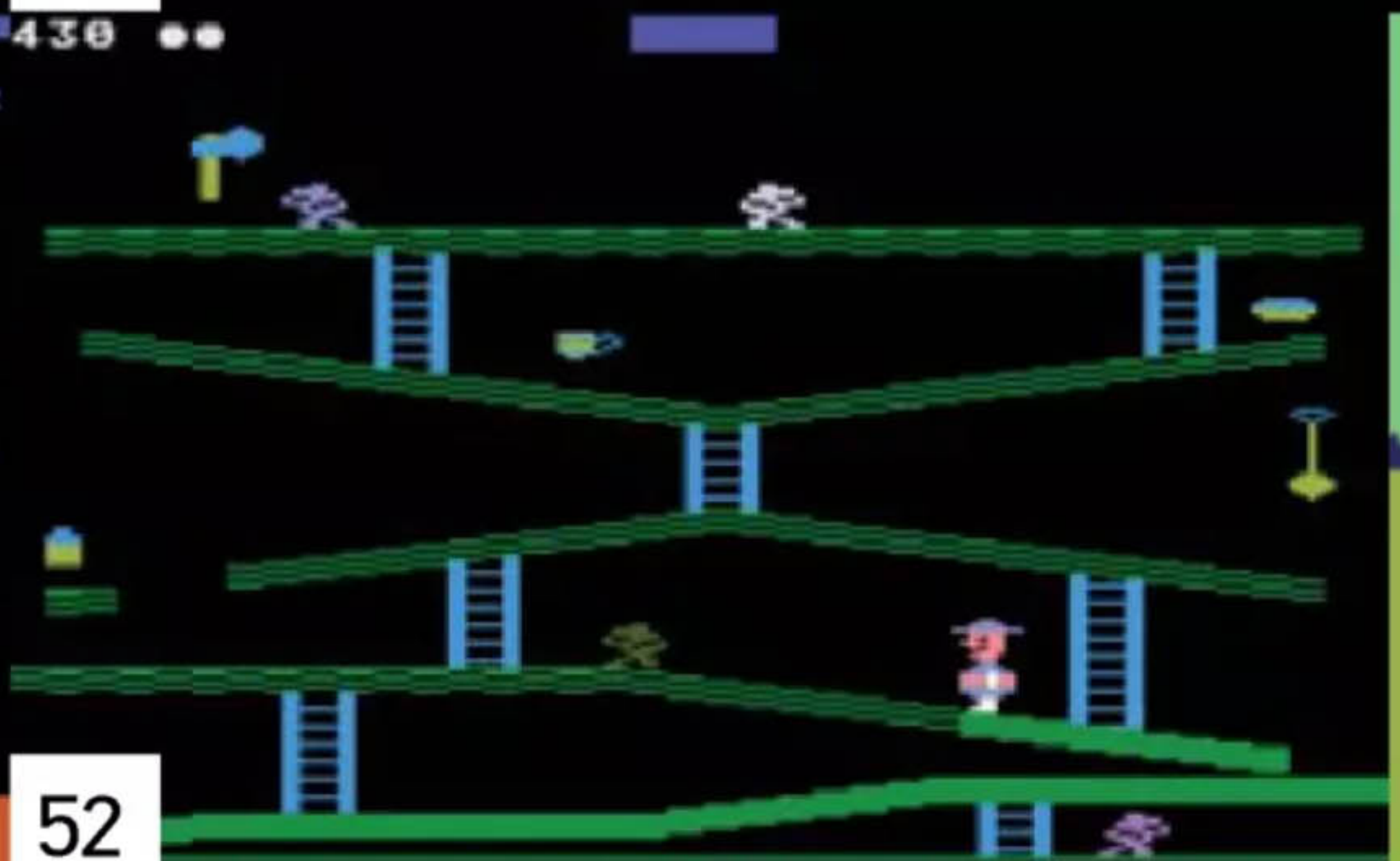
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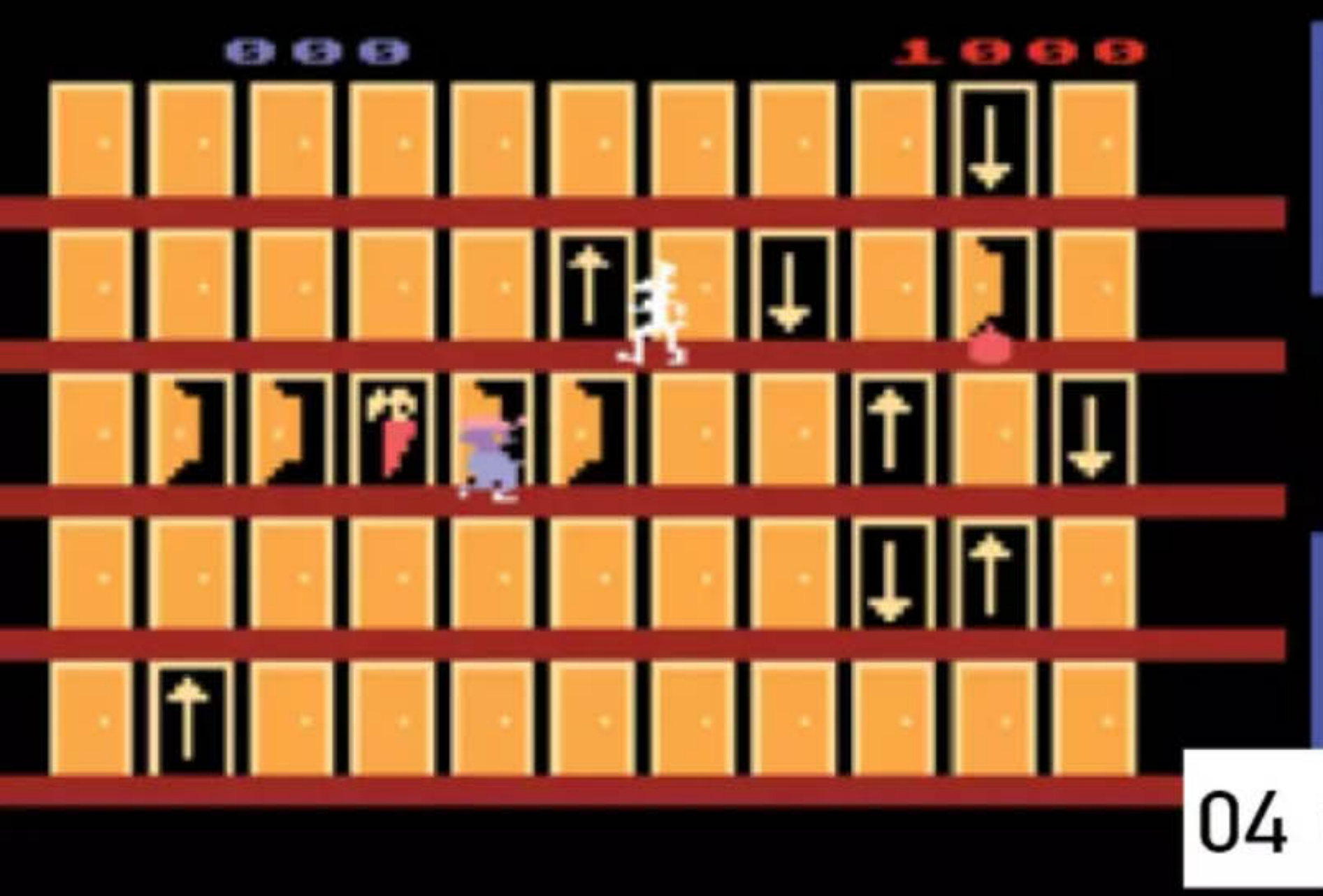
01 Congo Bongo
02 Robotron: 2084
03 Frogger II: Threeedeep!
04 Looney Tunes Hotel
05 Berzerk
06 RealSports Basketball
07 Zaxxon
08 Ballblazer
09 Choplifter
10 James Bond 007
11 Mario Bros
12 Dig Dug
13 Pengo
14 Tempest
15 Q*bert
16 Asteroids
17 Decathlon
18 Keystone Kapers
19 Montezuma's Revenge
20 Gorf
21 Stargate
22 Pitfall II: The Lost Caverns
23 Countermeasure
24 Kaboom!
25 River Raid
26 Super Breakout
27 Vanguard
28 Megamania
29 Astrochase
30 Centipede
31 H.E.R.O.
32 Missile Command
33 Frisky Tom
34 RealSports Baseball
35 Kangaroo
36 Super Pac-Man
37 Popeye
38 Defender
39 Wizard of Wor
40 Miniature Golf
41 Rescue on Fractalus!
42 Joust
43 Qix!
44 Track & Field
45 Final Legacy
46 Pac-Man
47 Black Belt
48 Star Wars: The Arcade Game
49 Galaxian
50 Battlezone
51 Space Invaders
52 Miner 2049er
53 Pole Position
54 Zone Ranger
55 Beamrider
56 Mr Do's Castle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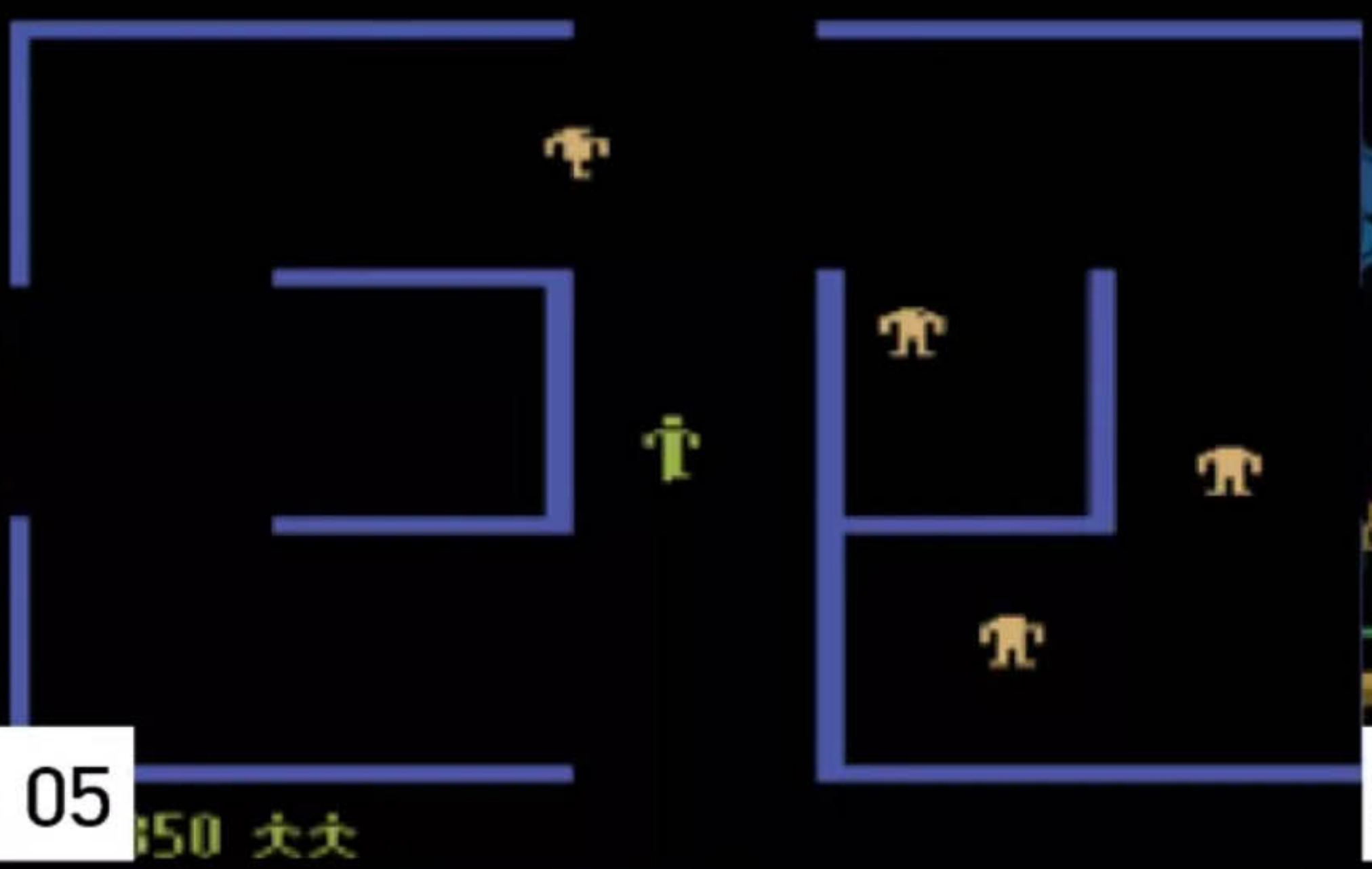
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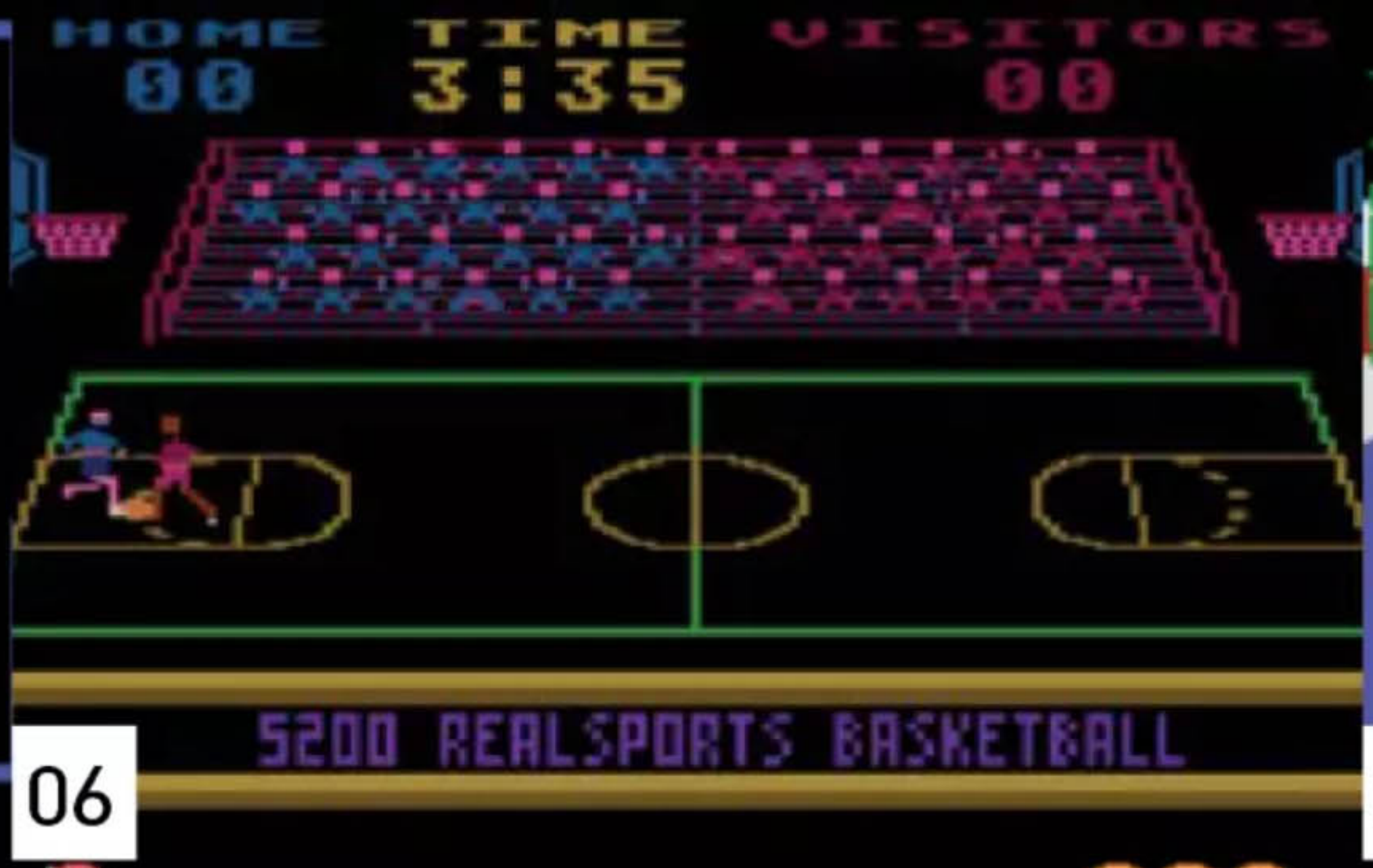
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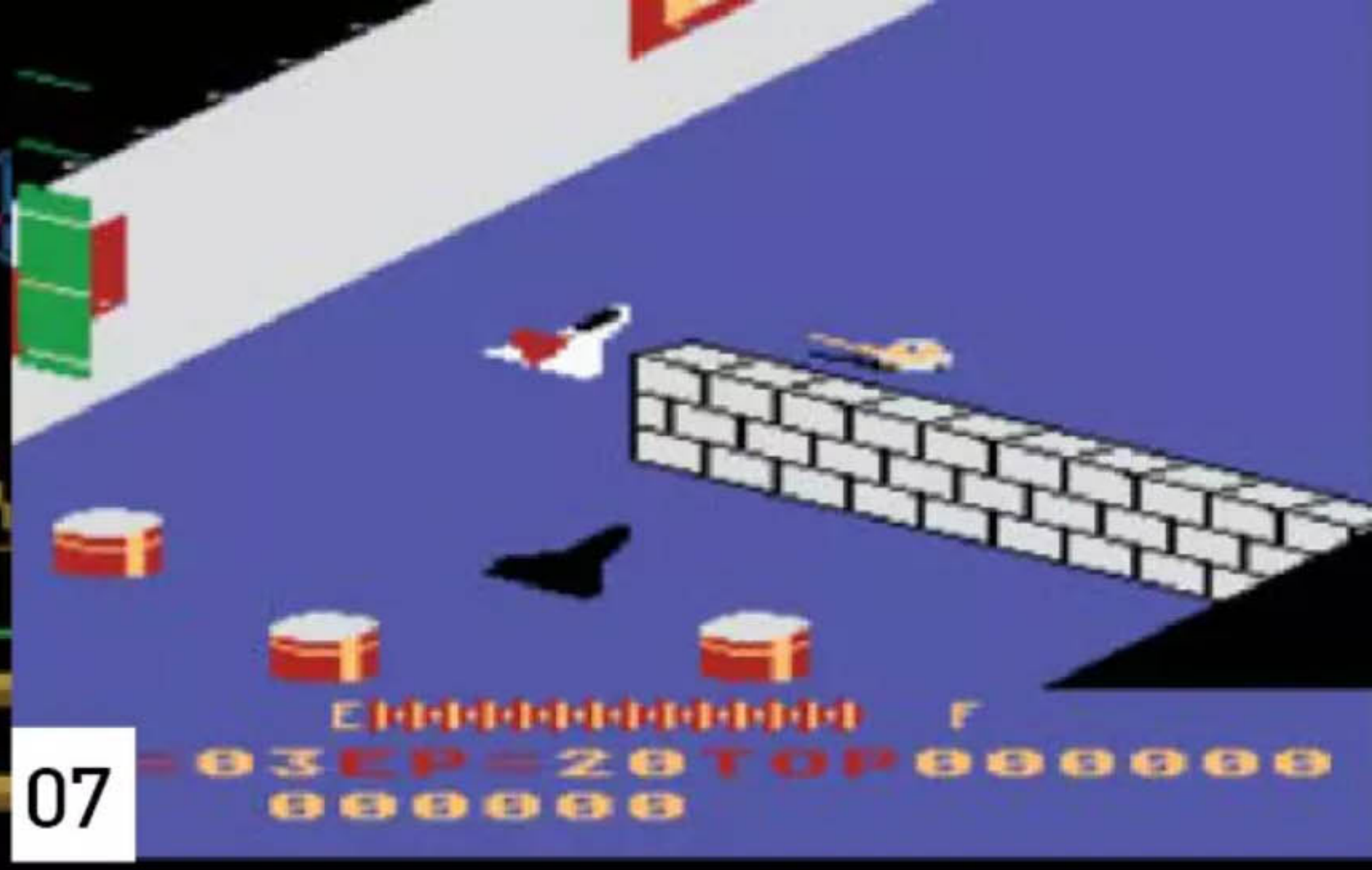
HOME
TIME
VISITORS
3:35
5200 REALSPORTS BASKETBALL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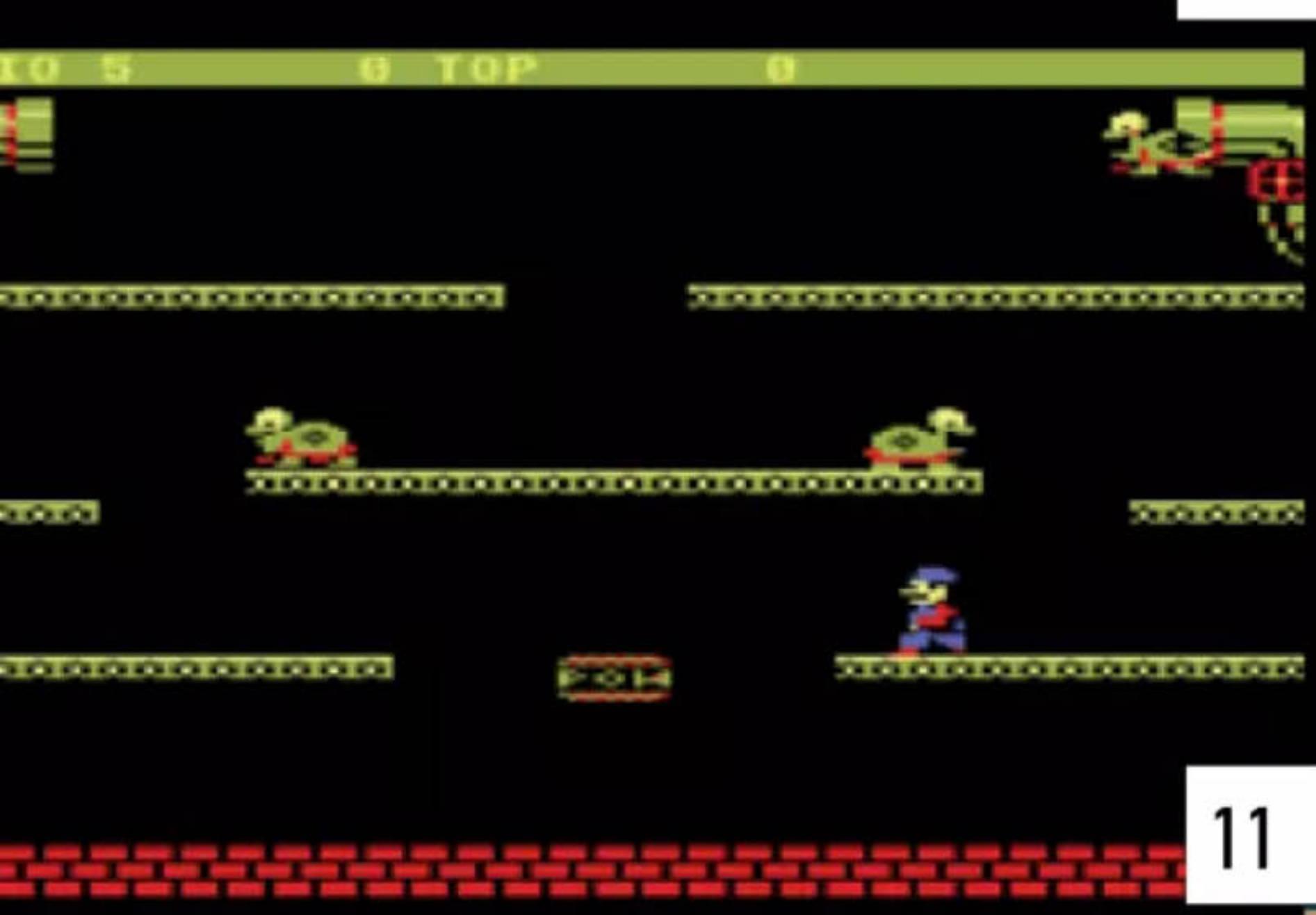
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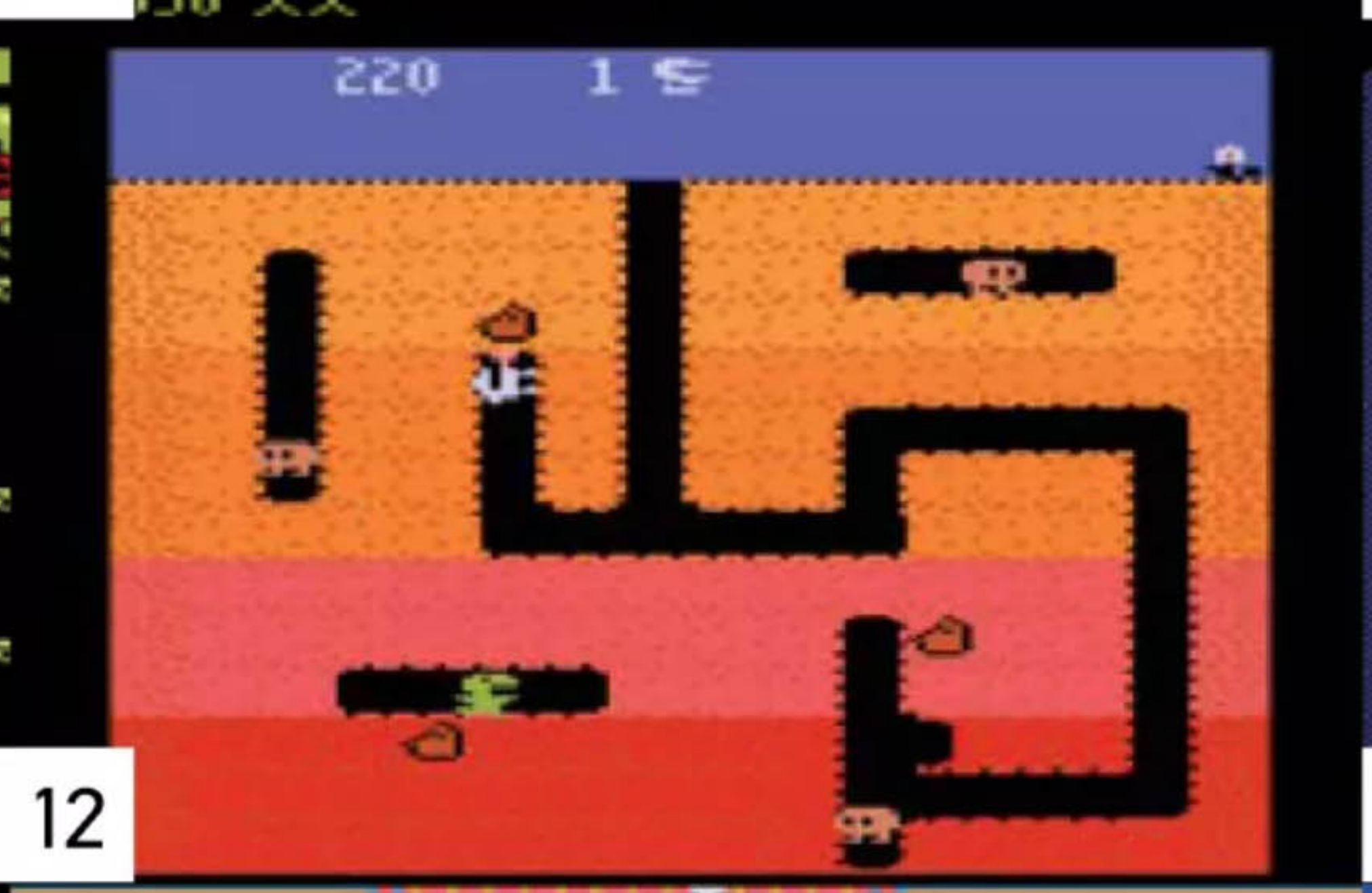
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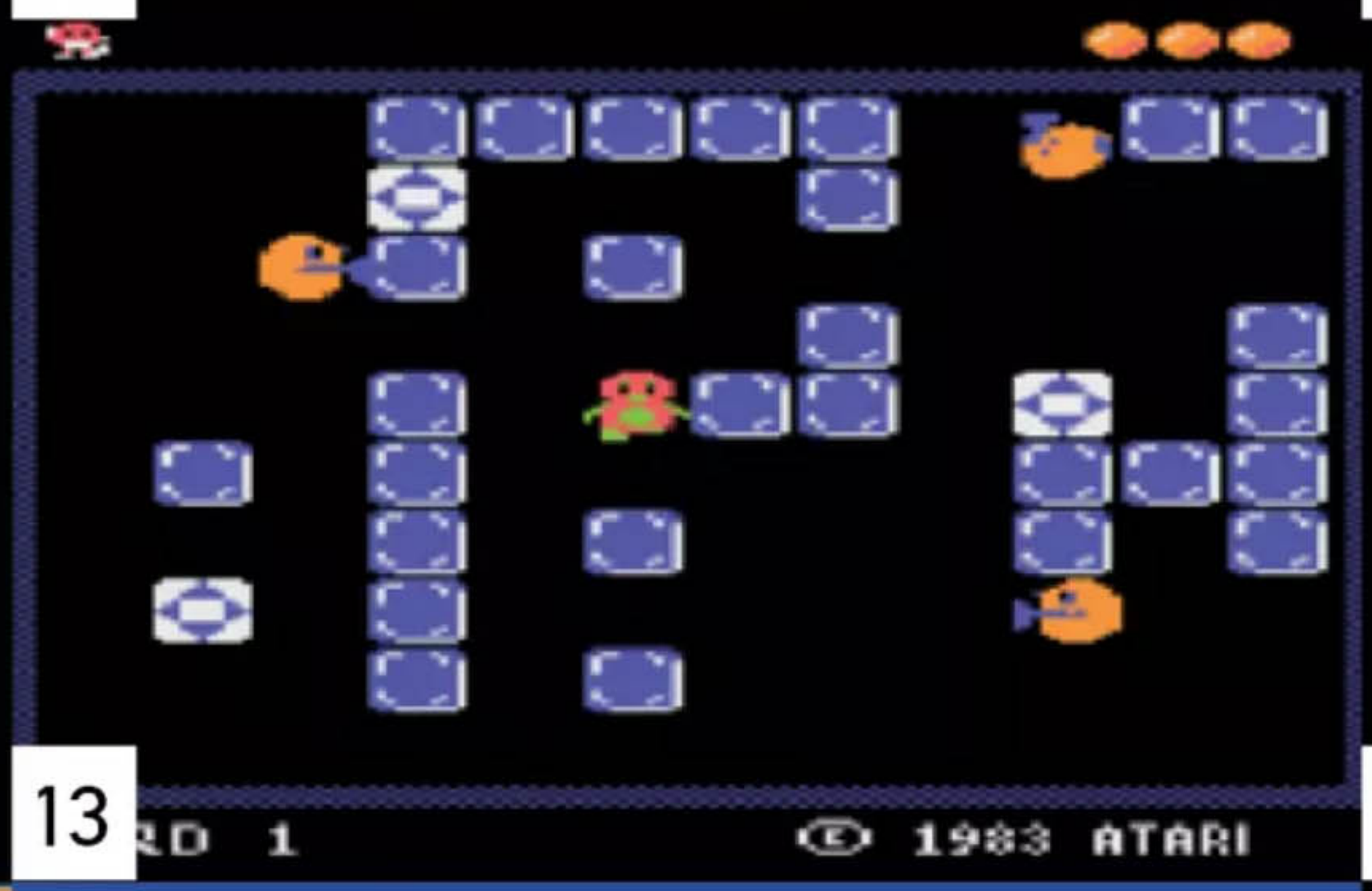
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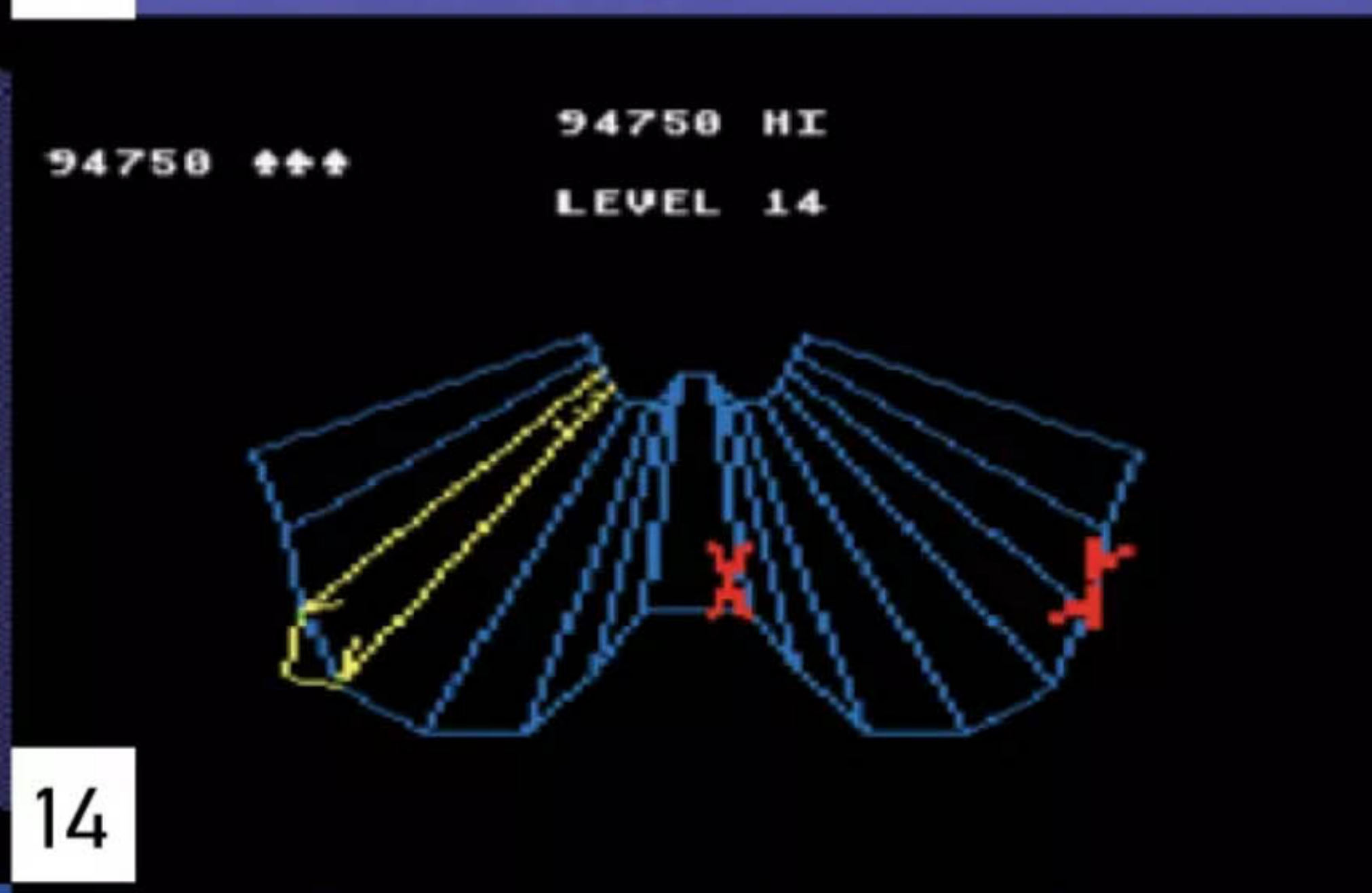
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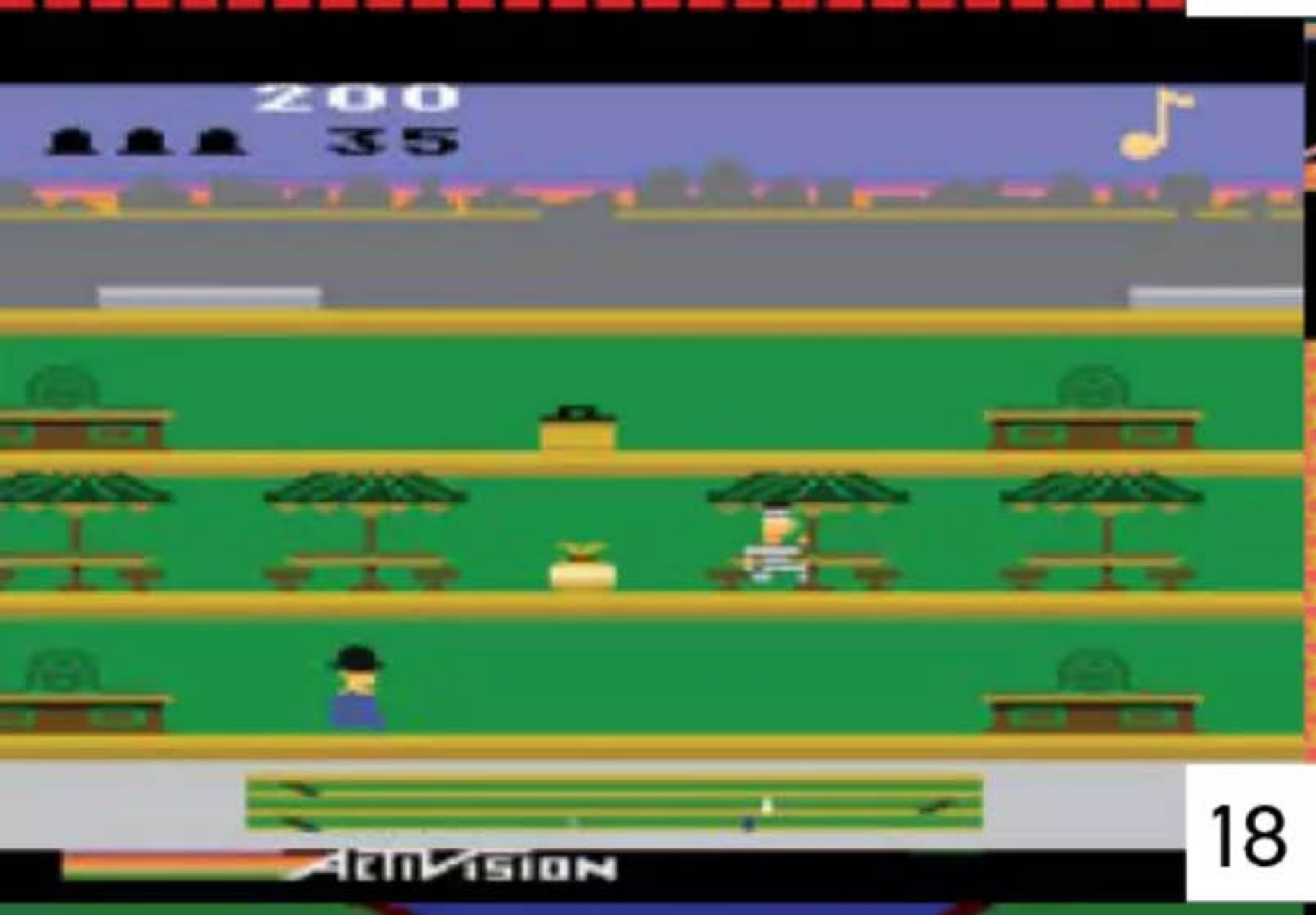
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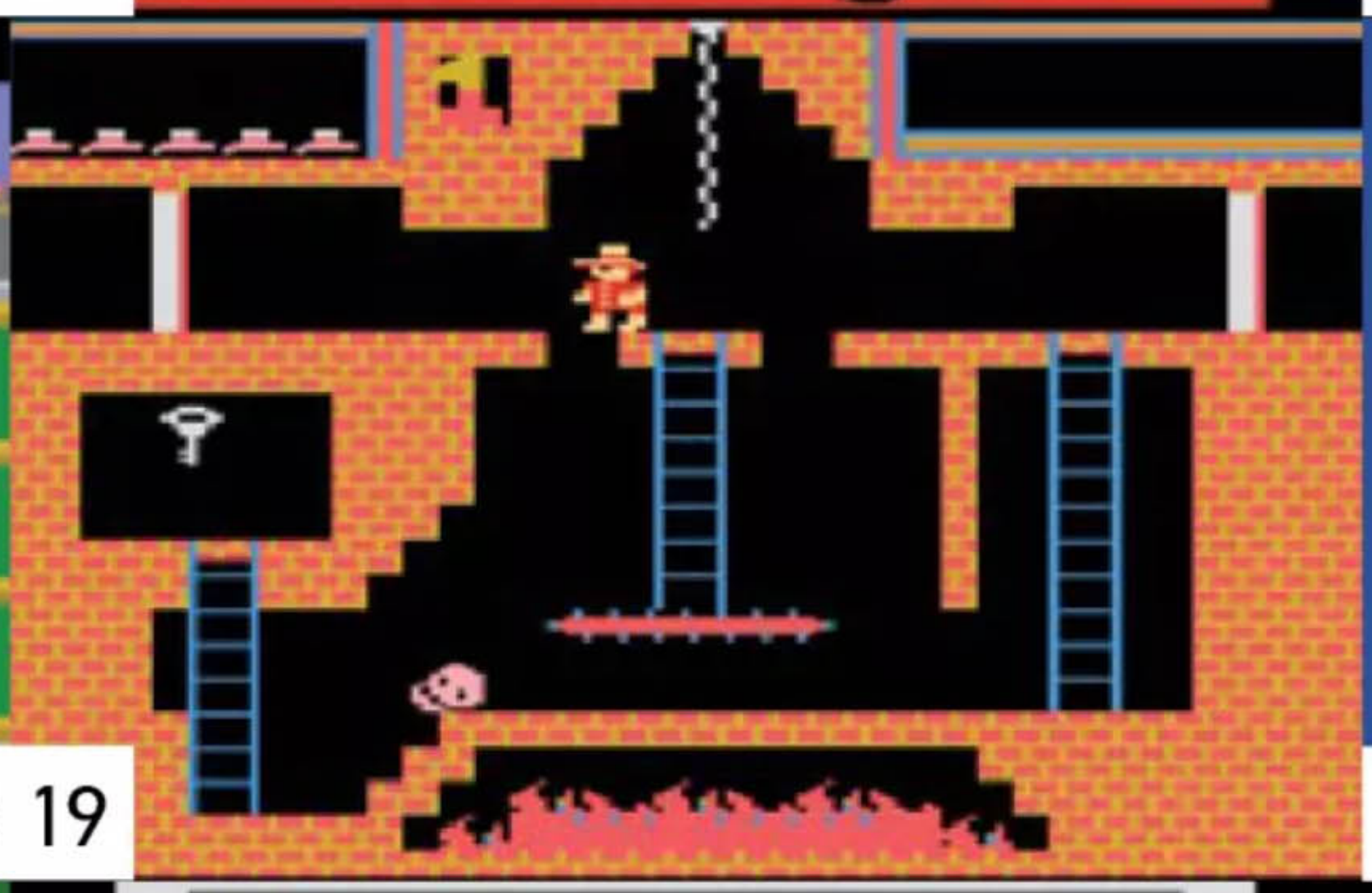
ACTIVISION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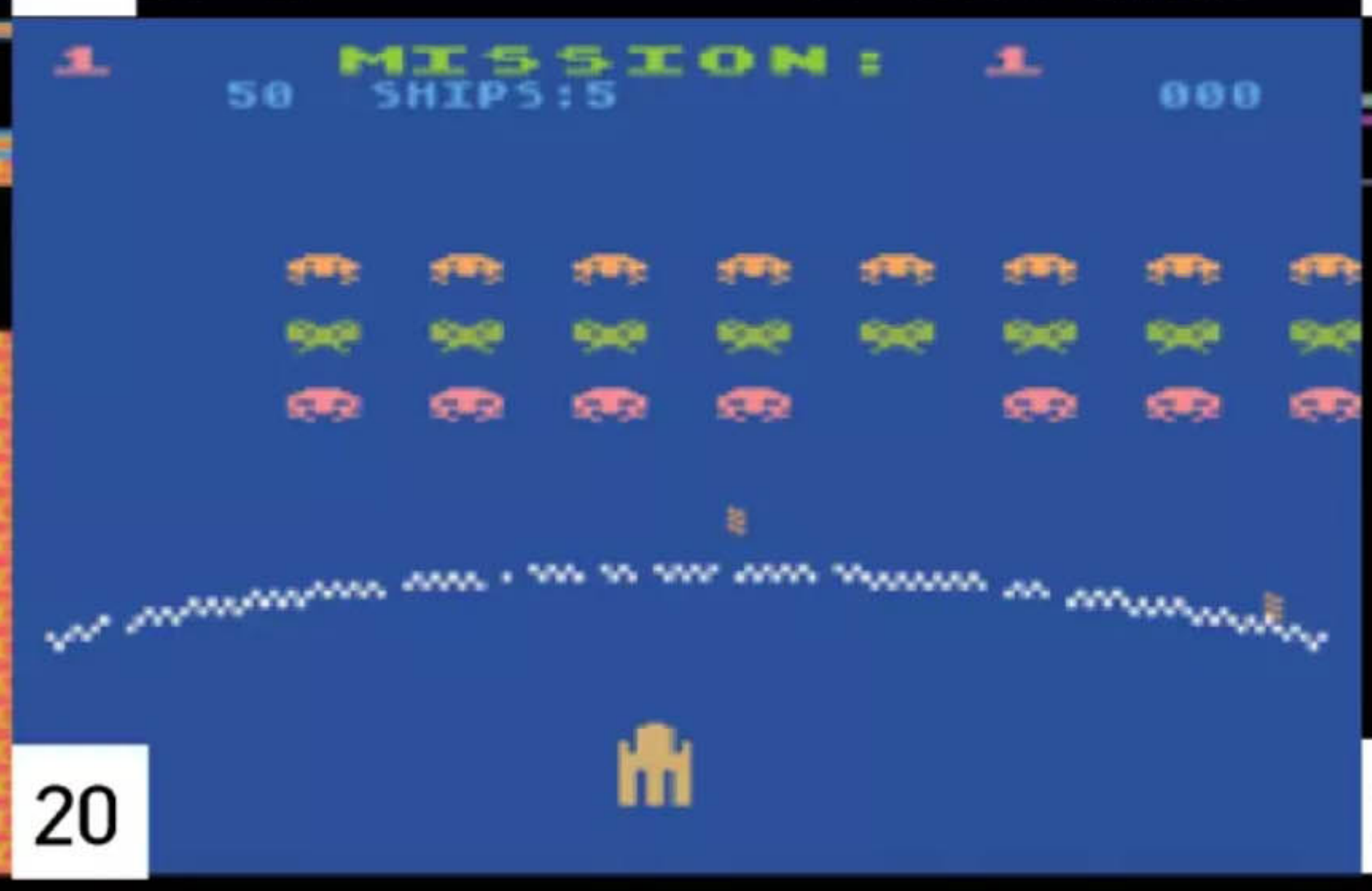
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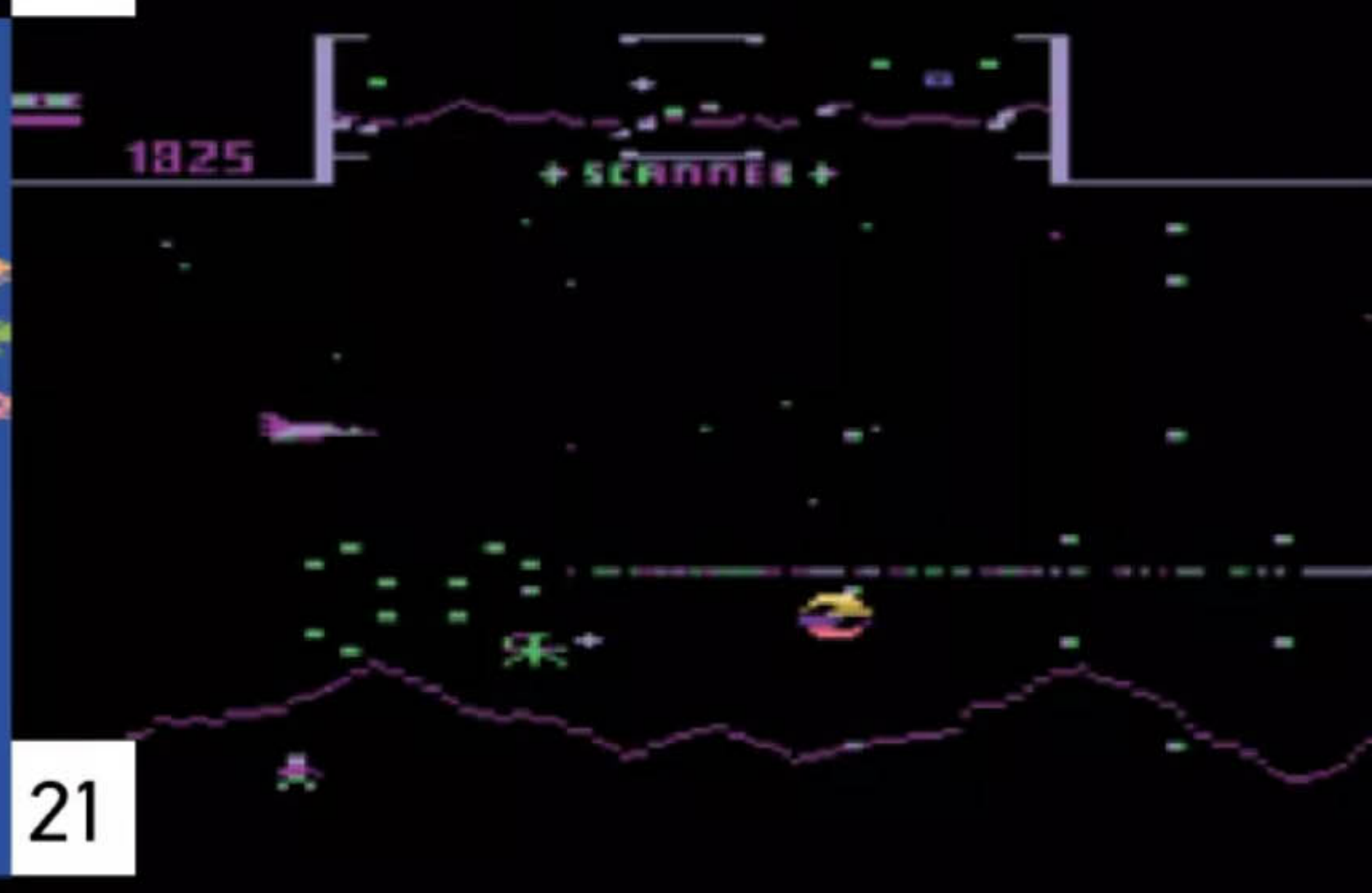
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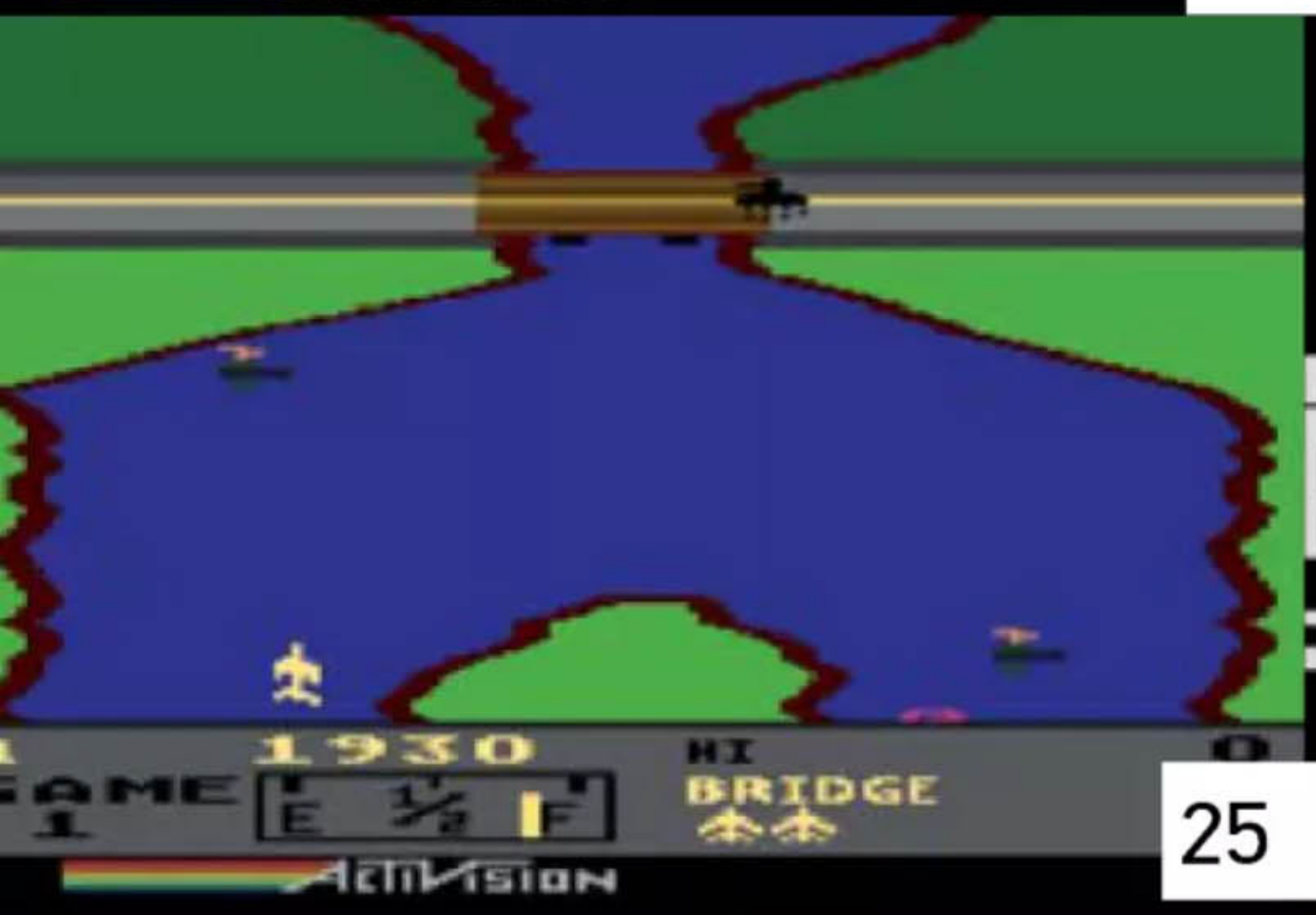
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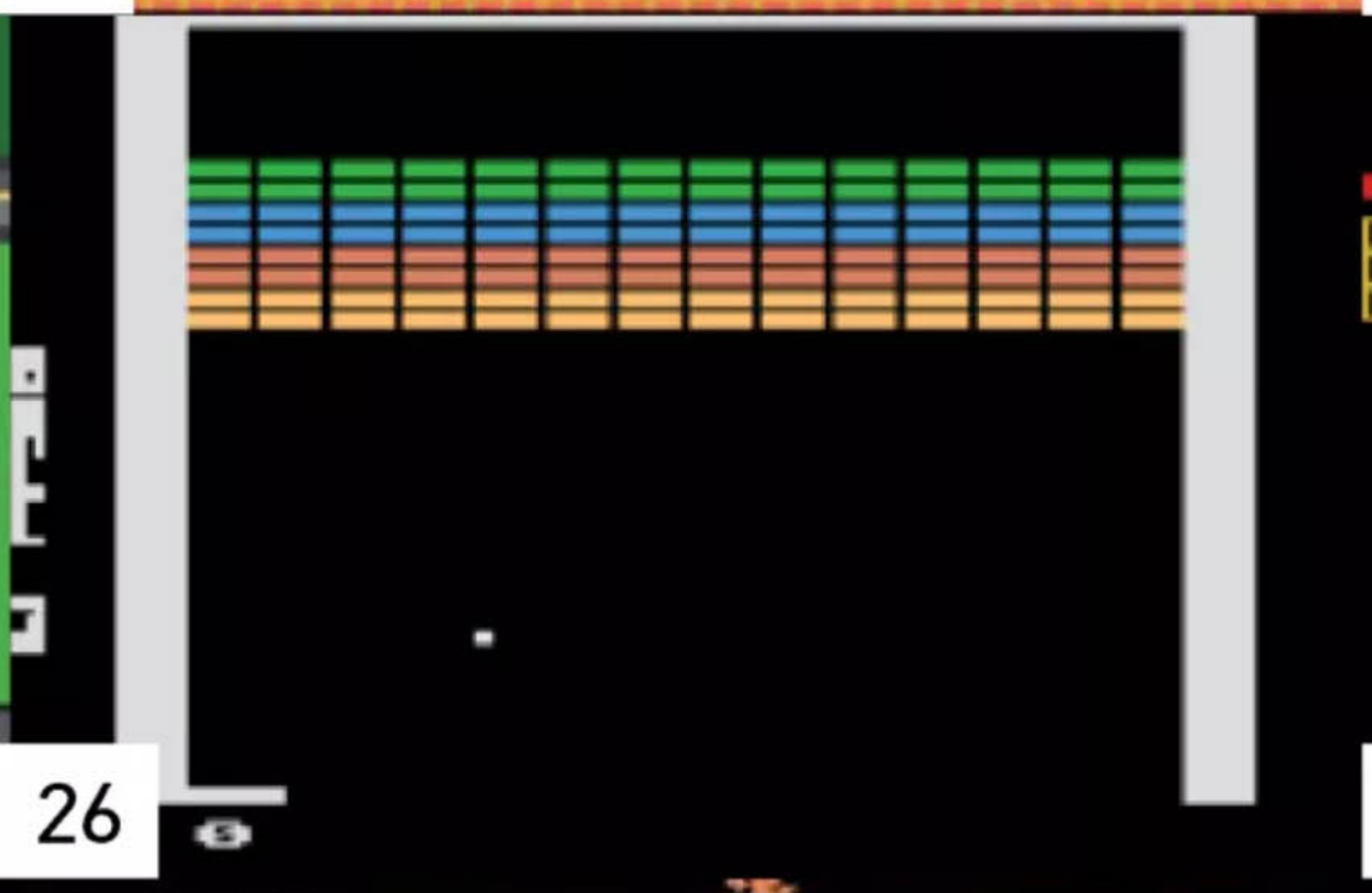
GAME
BRIDGE
ACTIVISION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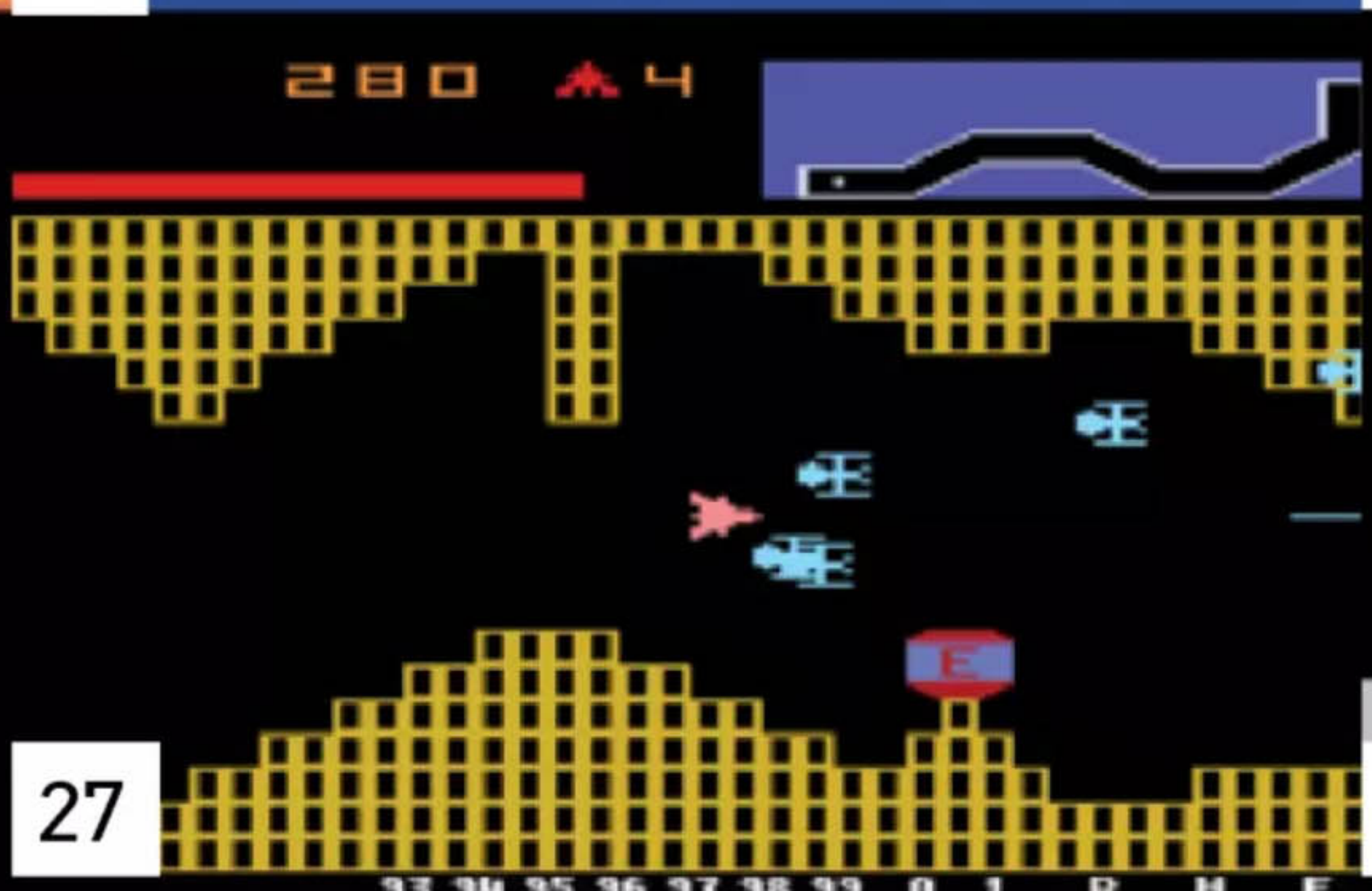
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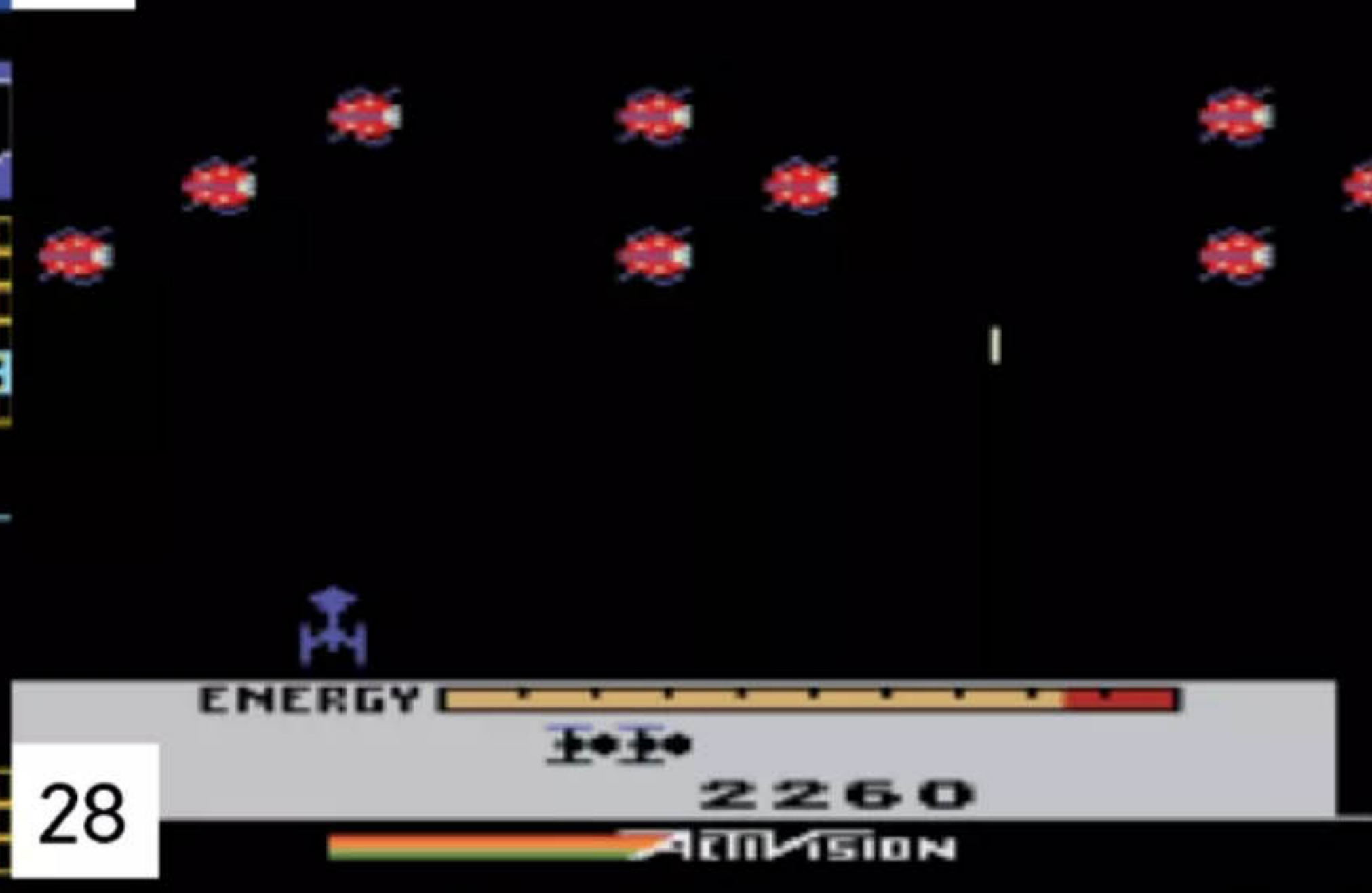
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ENERGY
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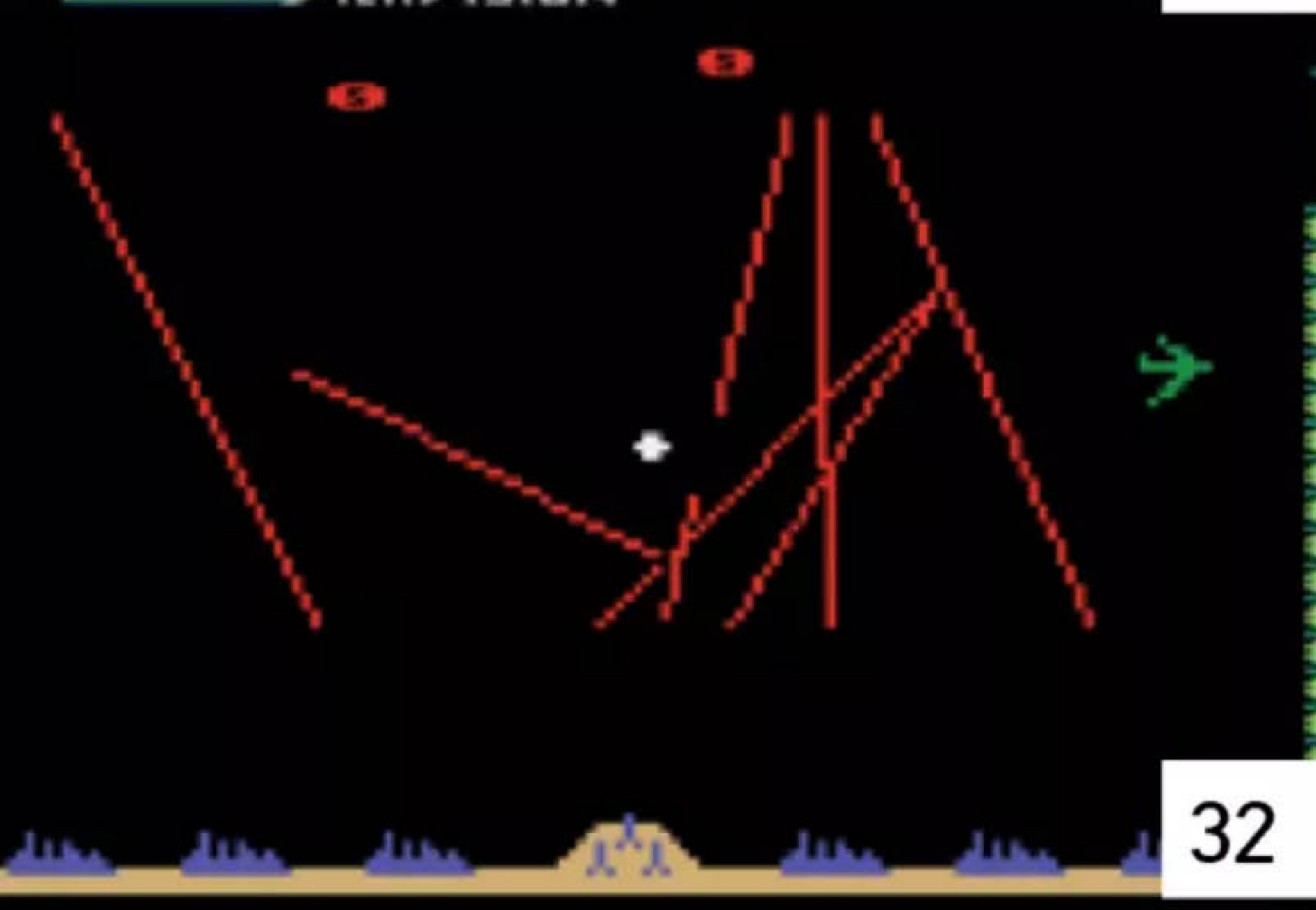
ACTIVISION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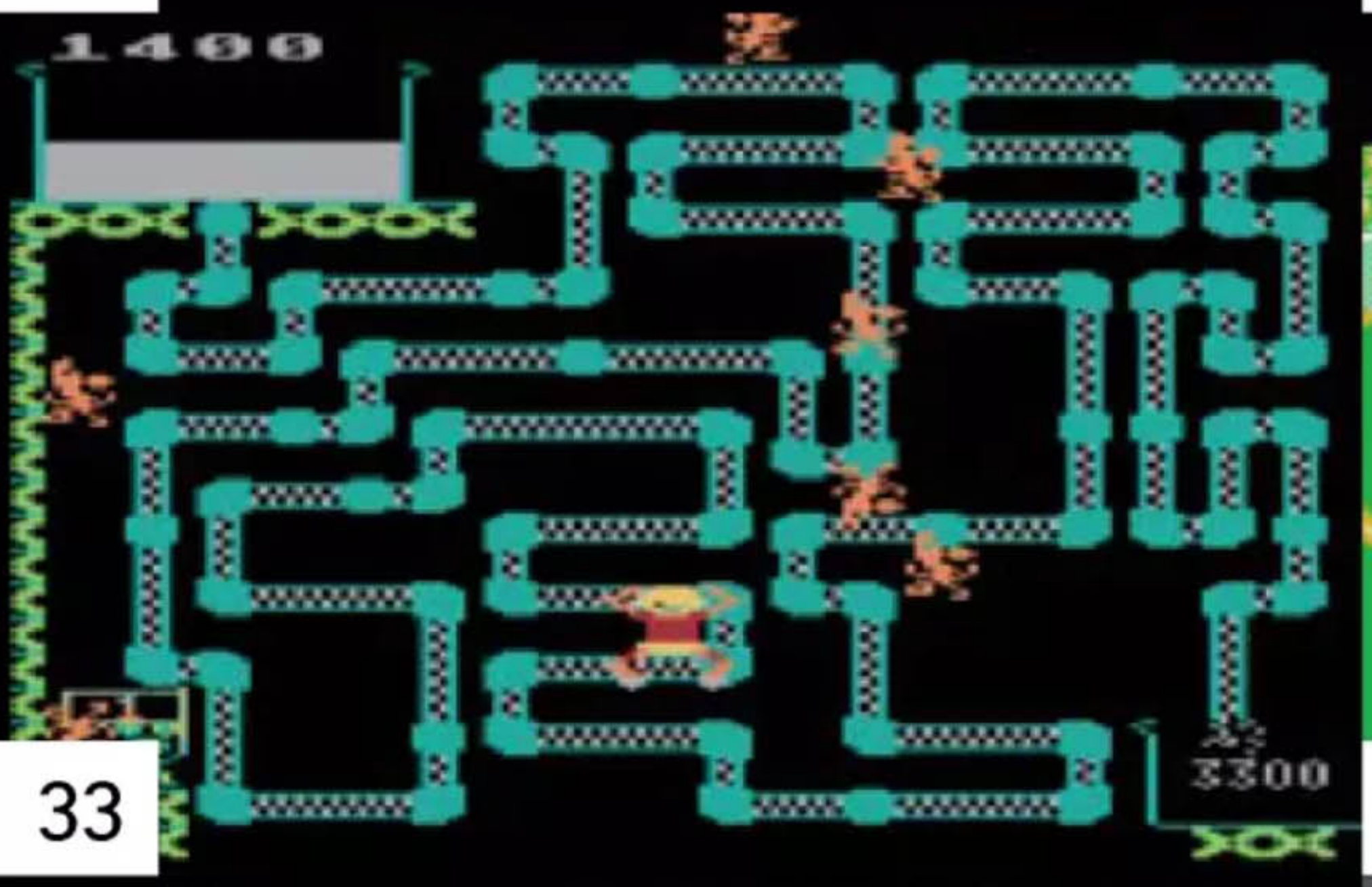
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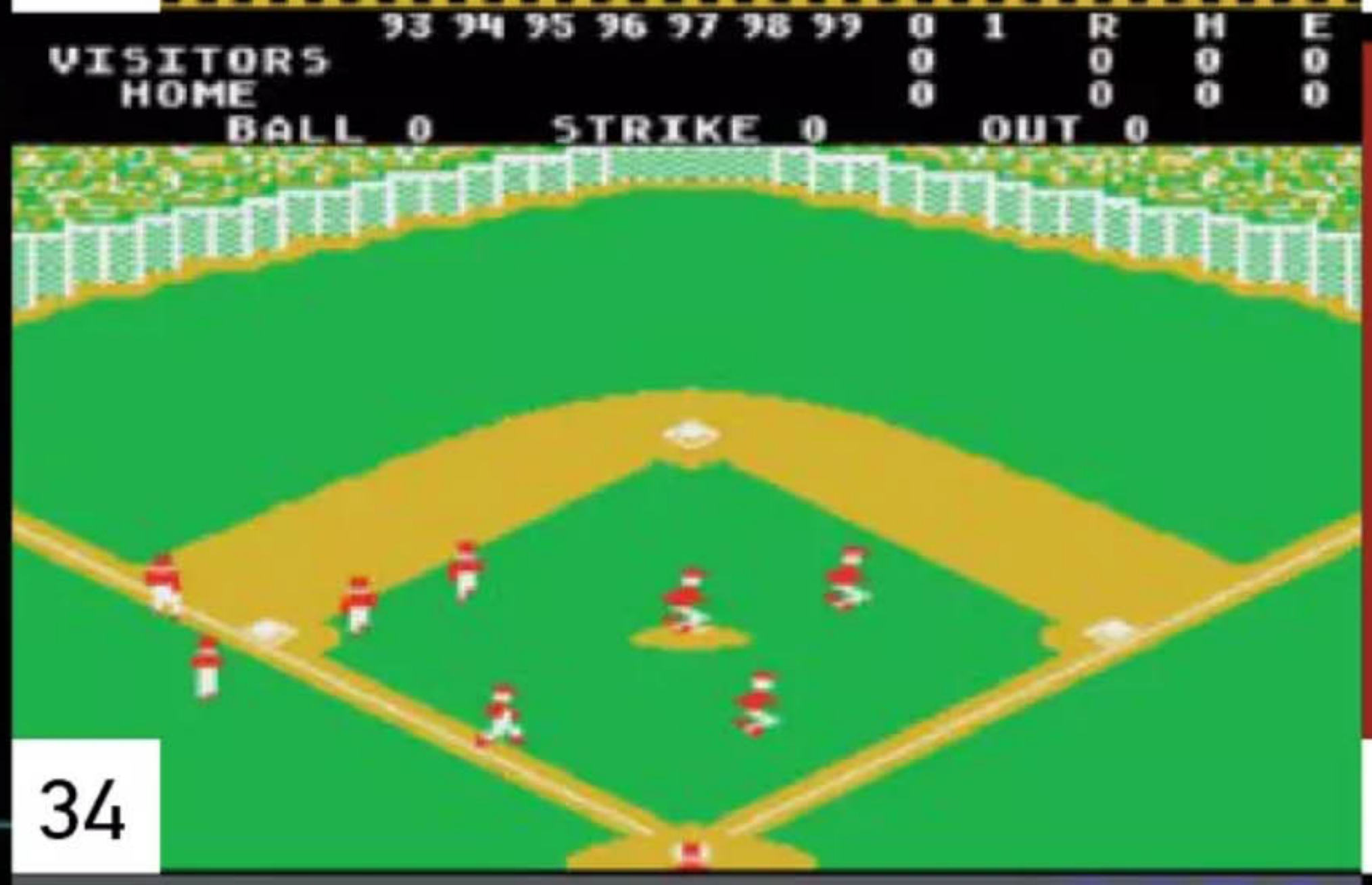
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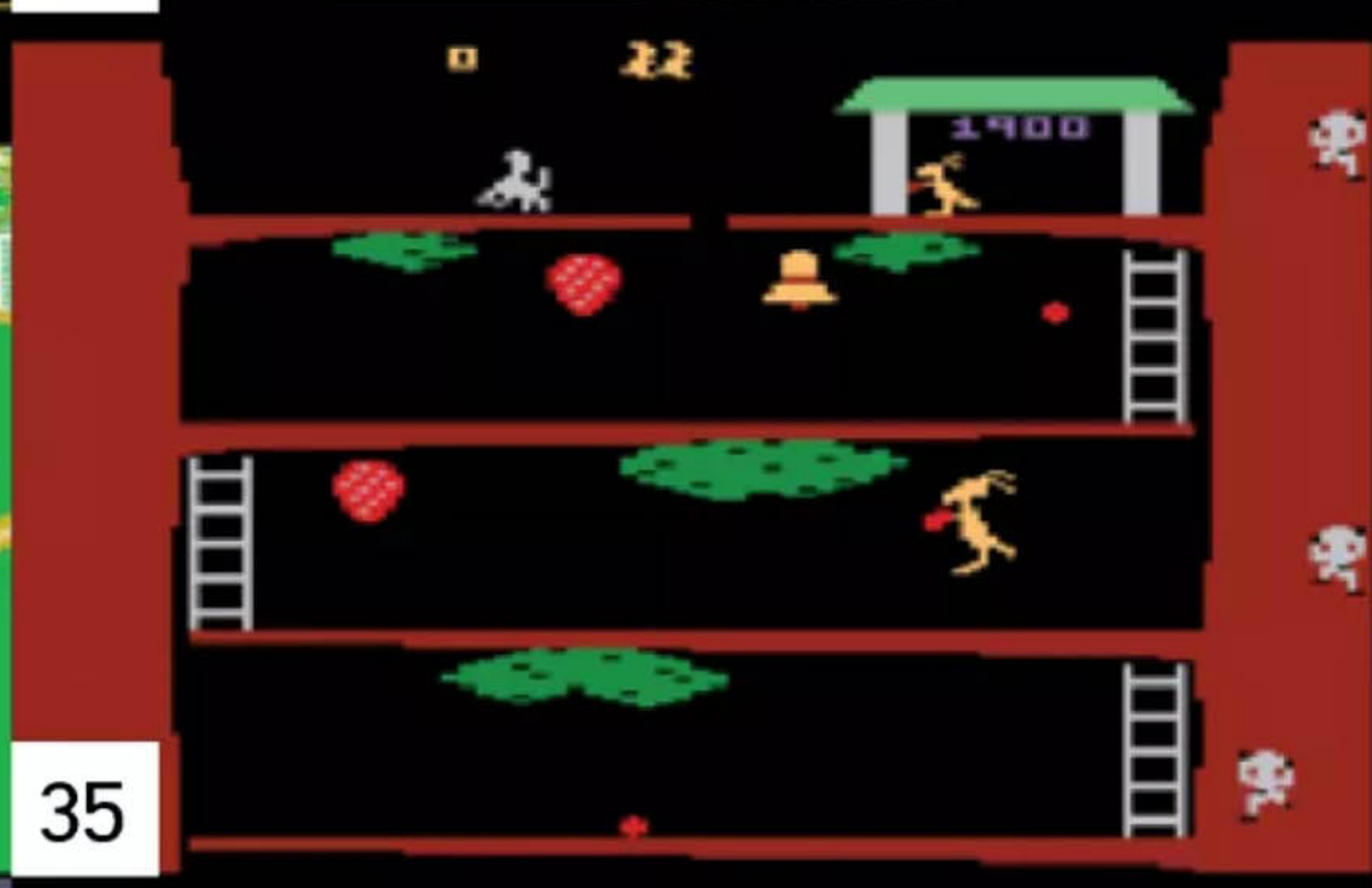
VISITORS
HOME
BALL
STRIKE
OUT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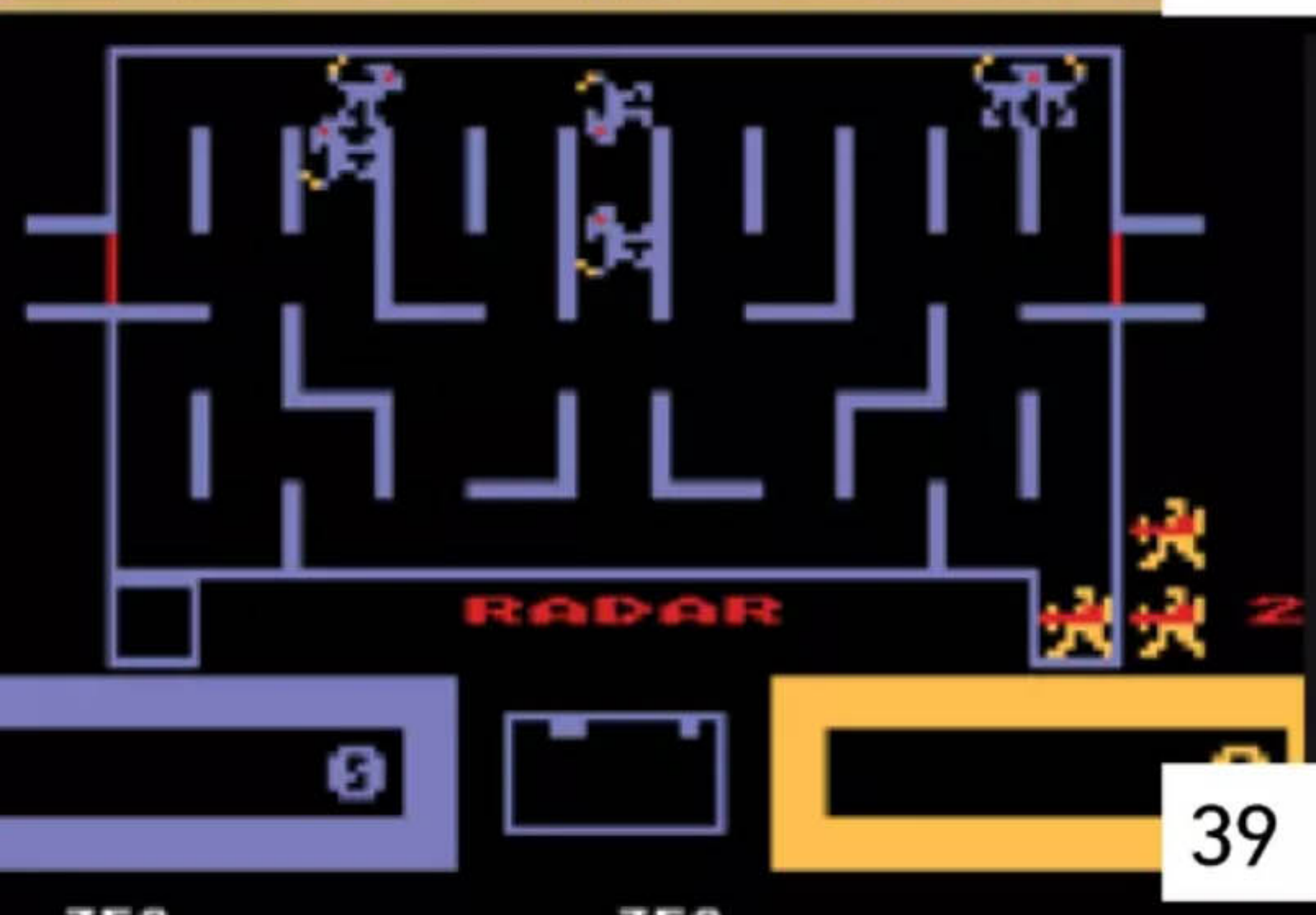
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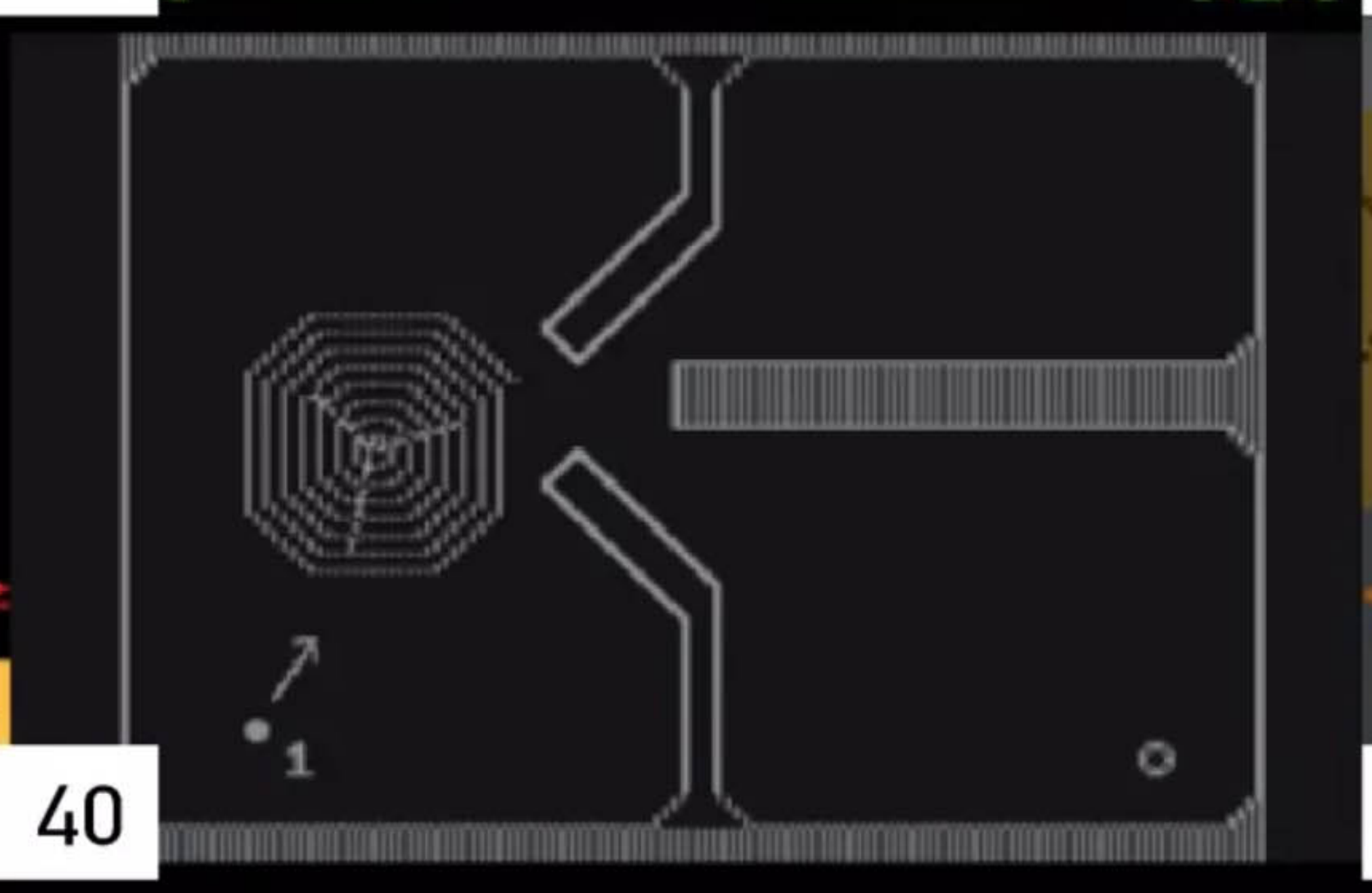
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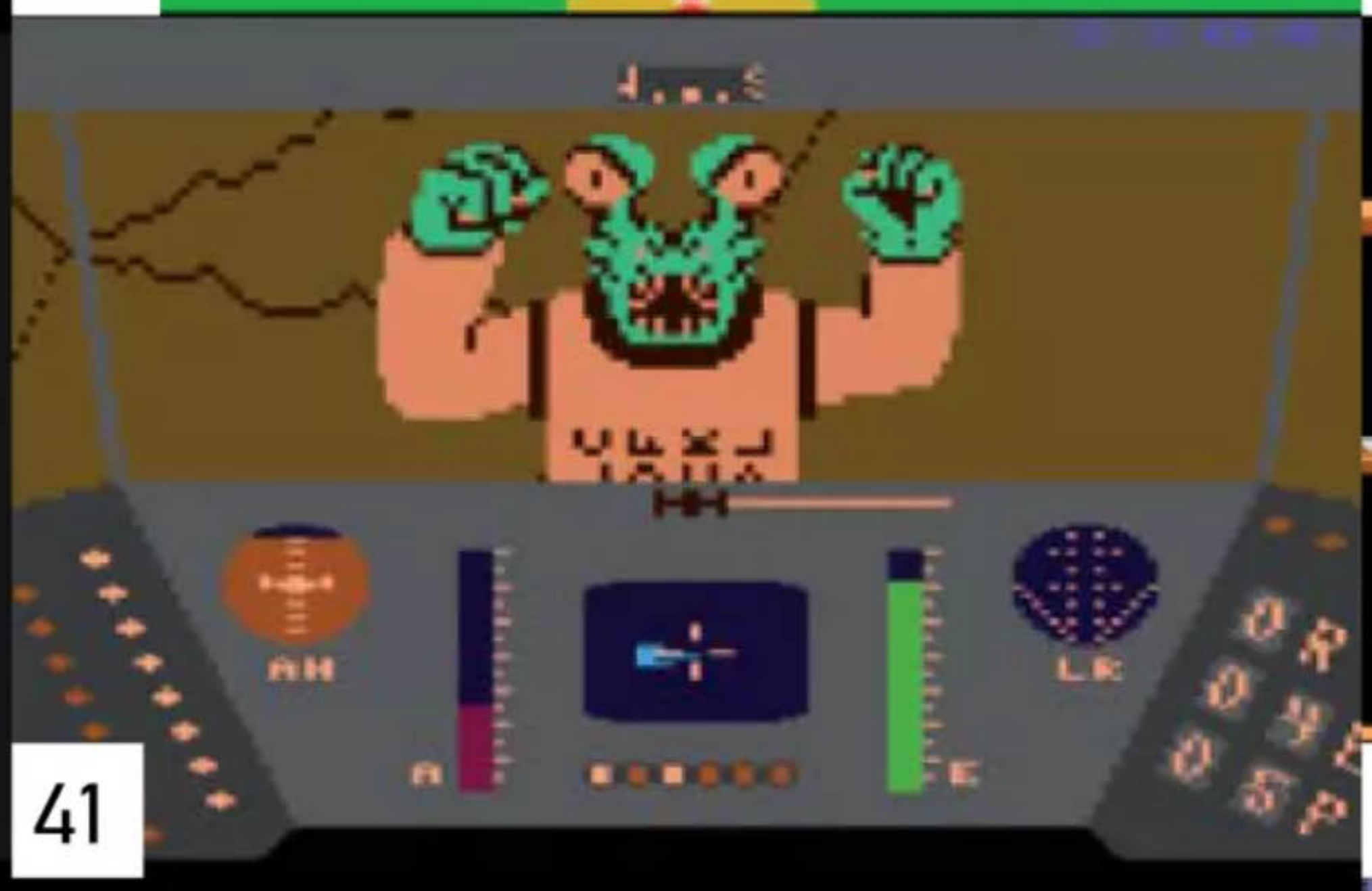
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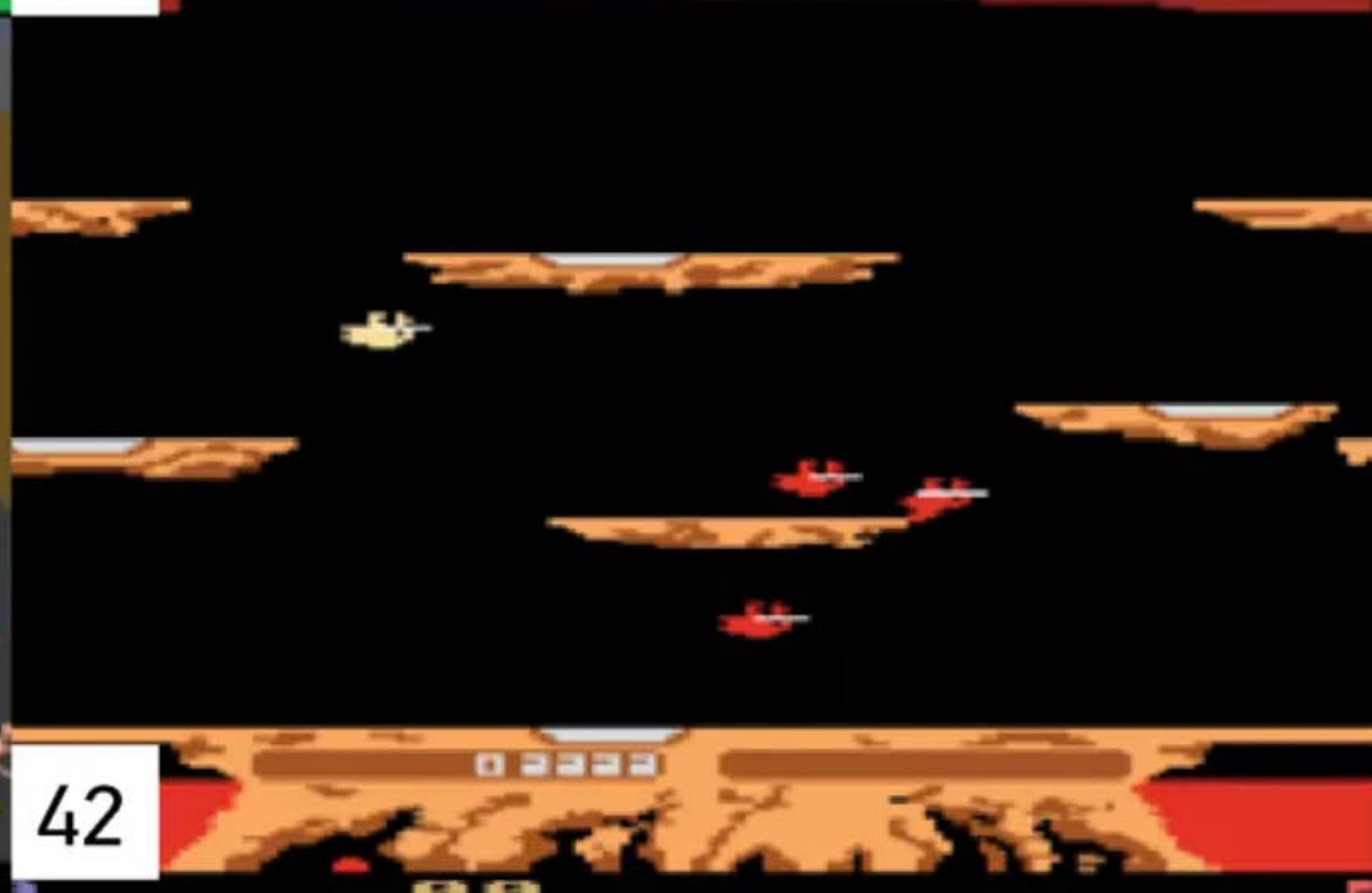
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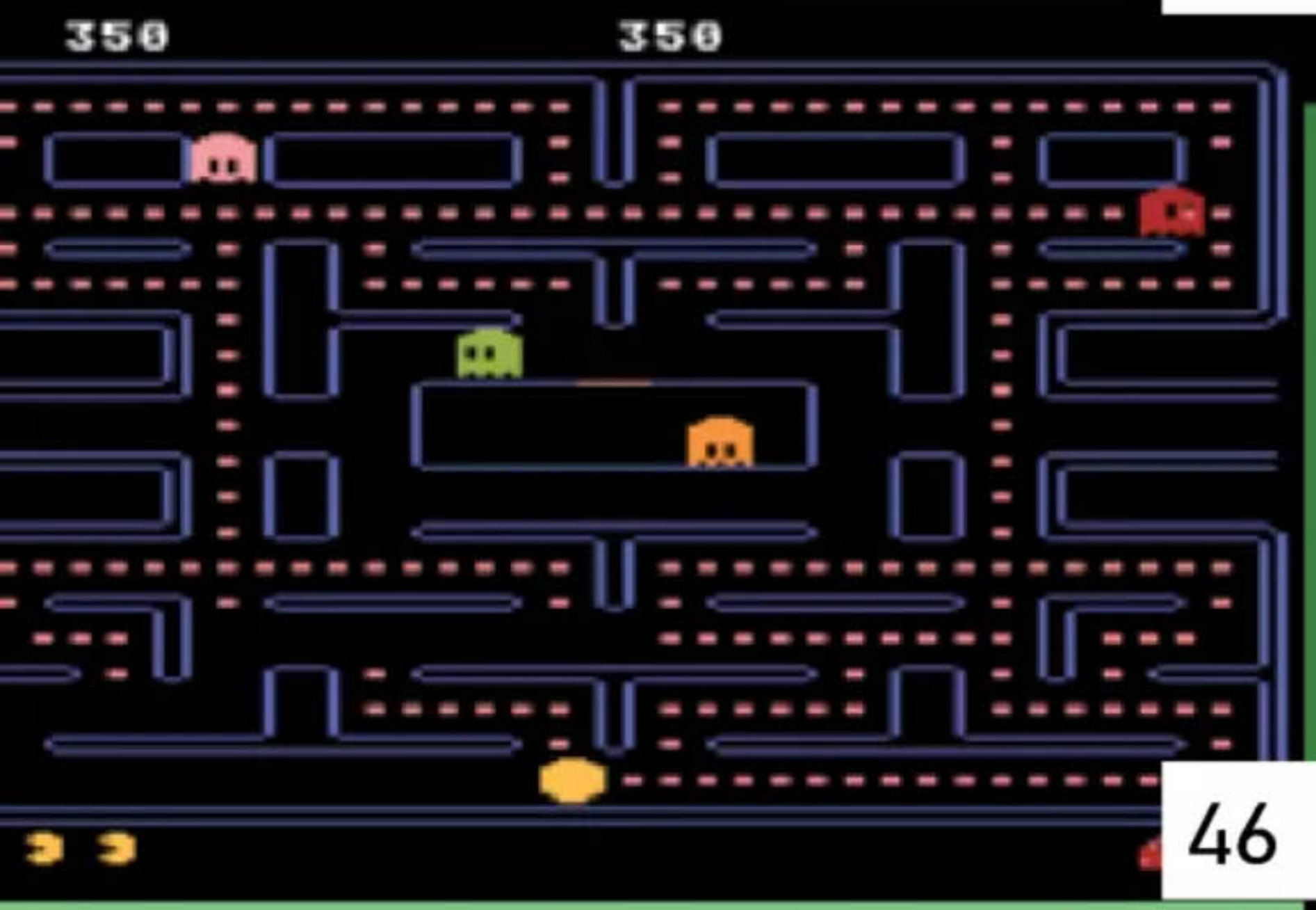
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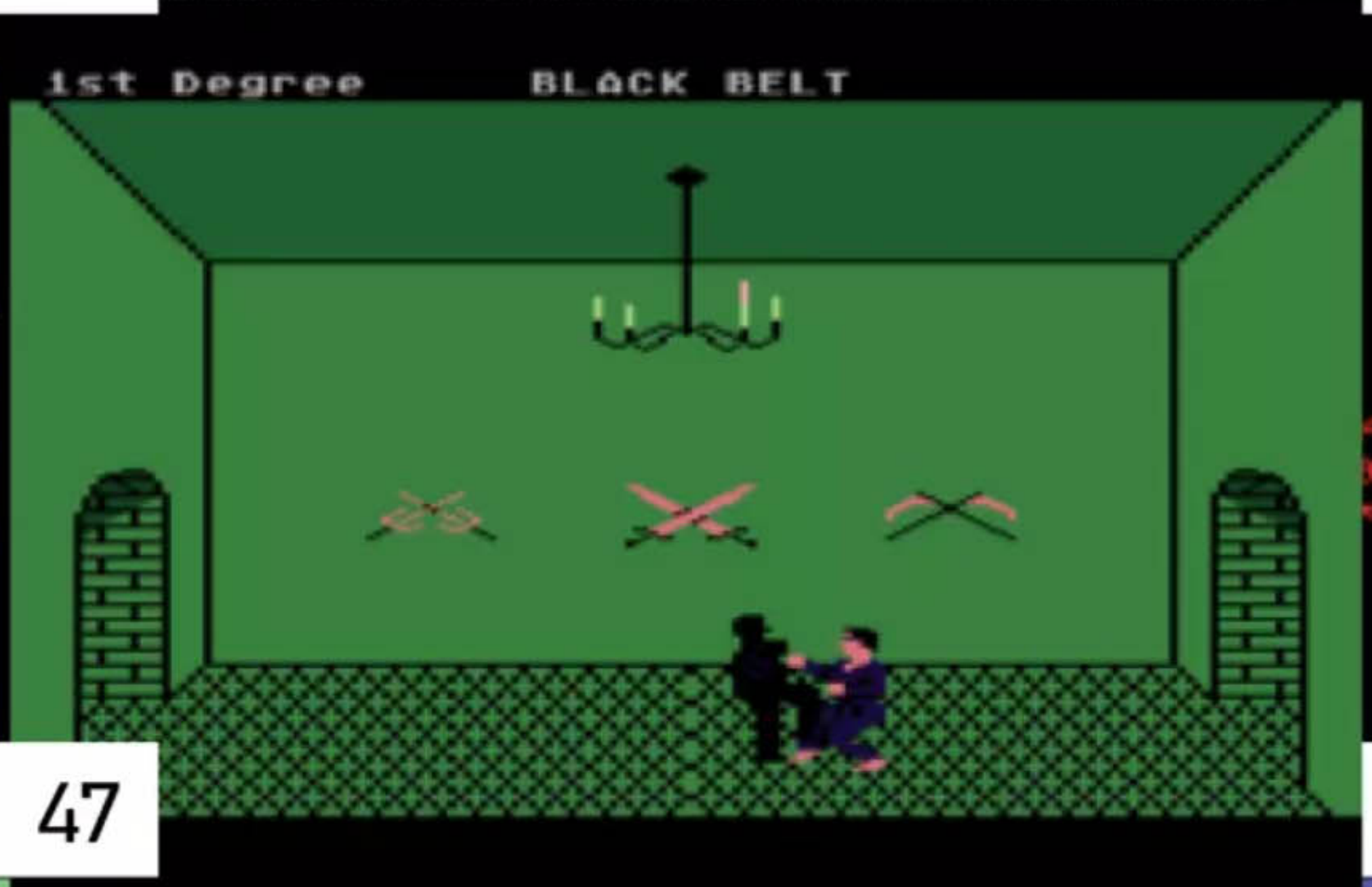
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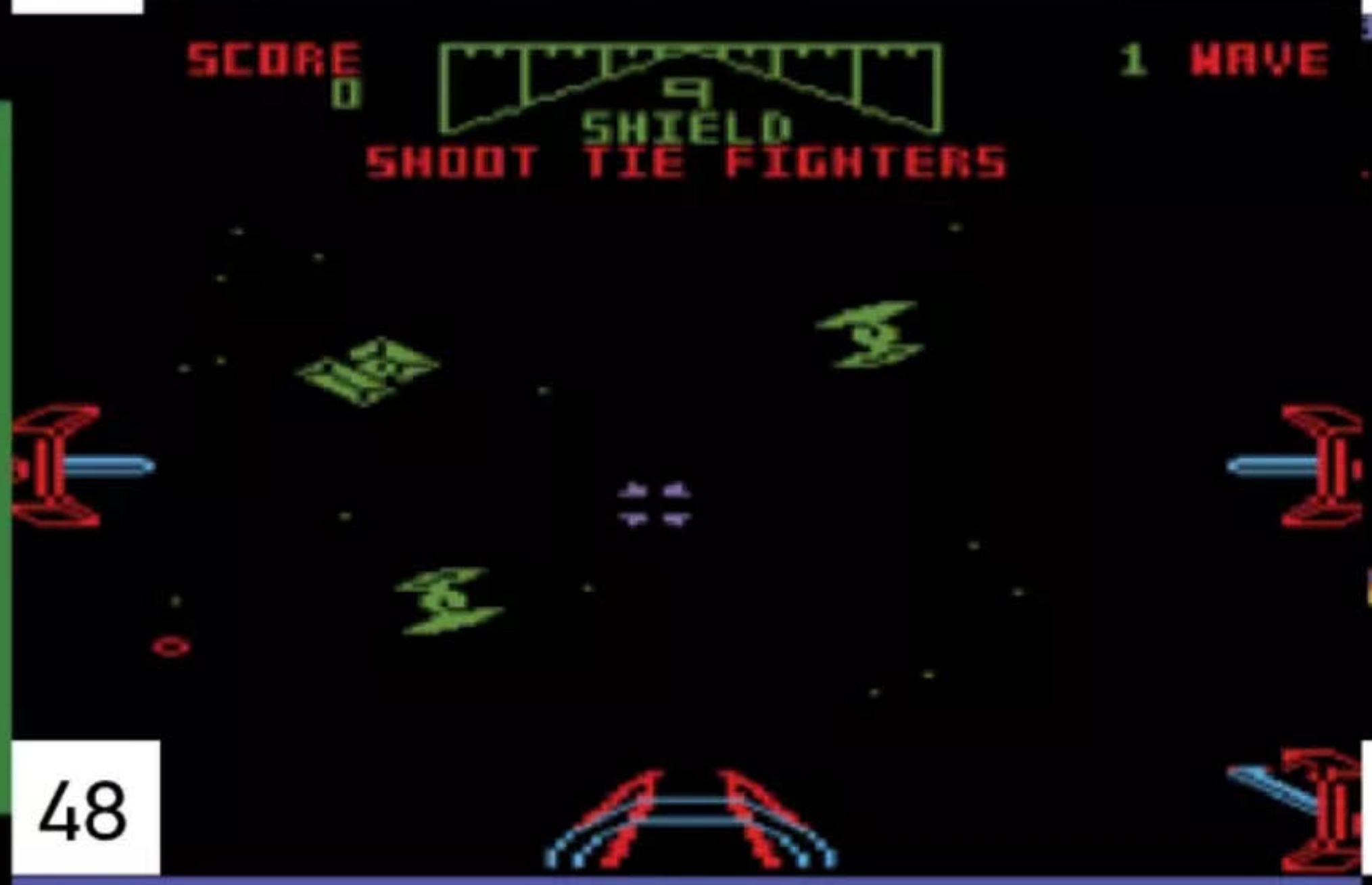
1st Degree
BLACK BELT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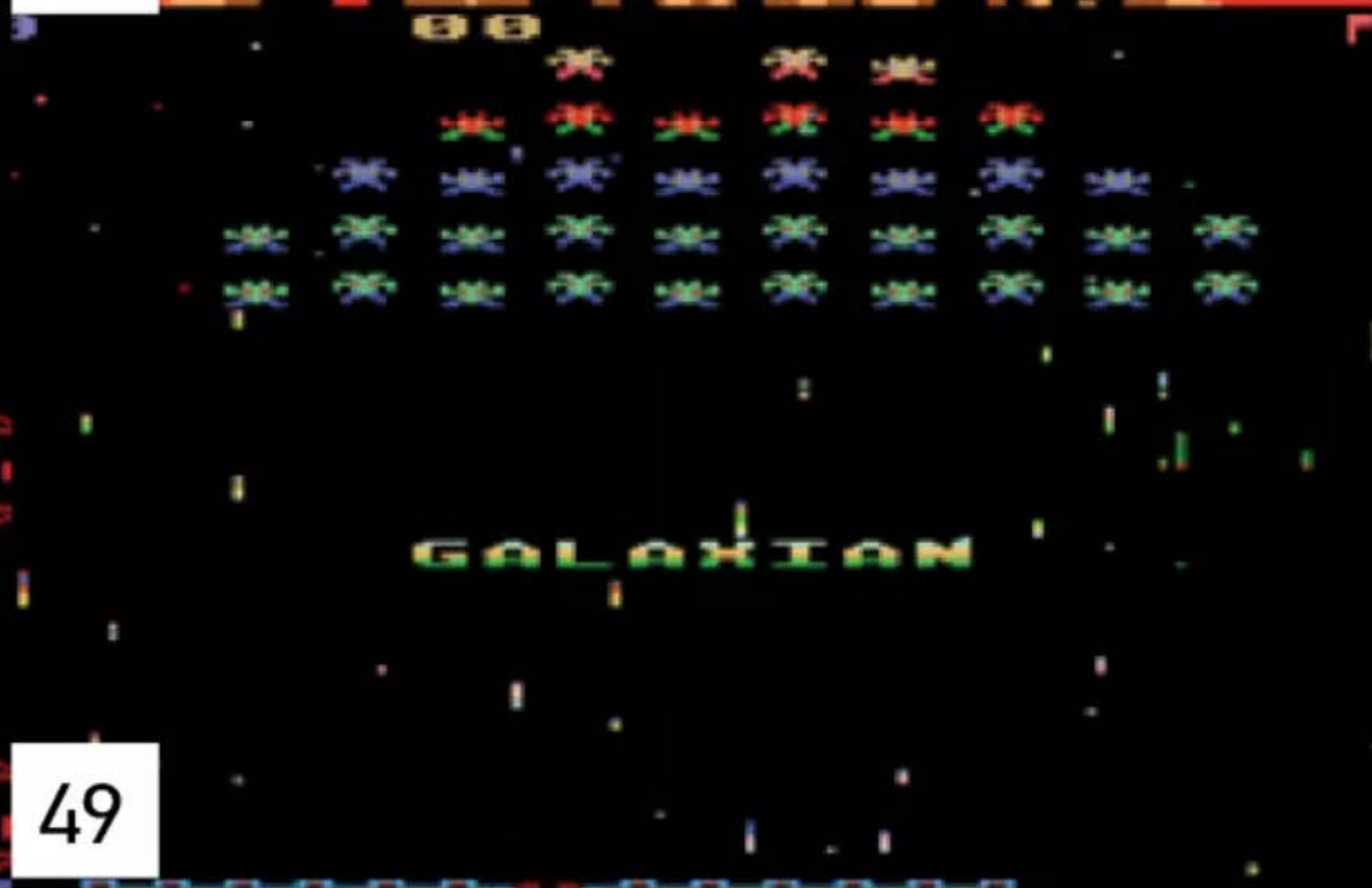
SCORE
SHIELD
1 WAVE
SHOOT TIE FIGHTERS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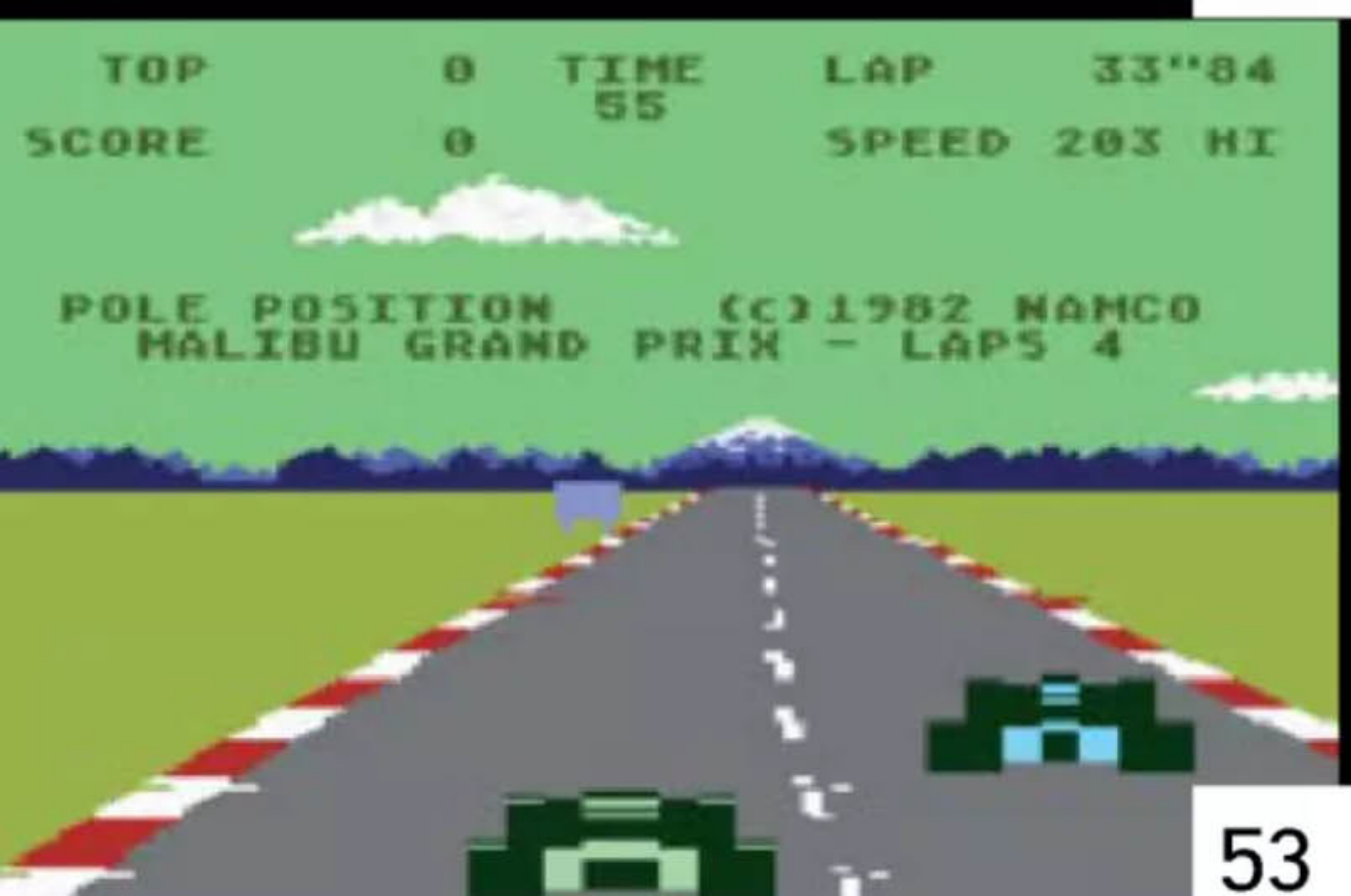
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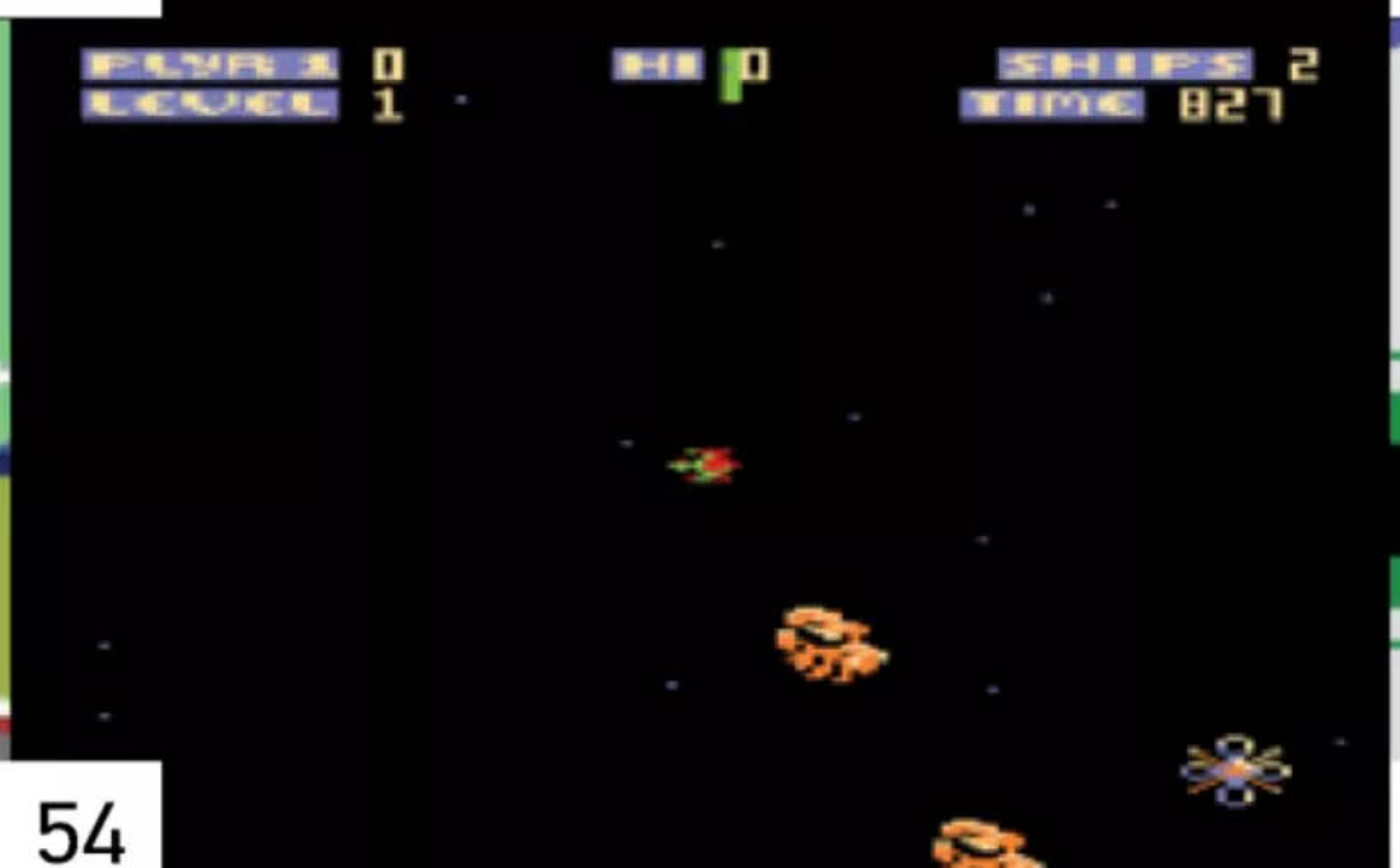
TOP
TIME
LAP
SCORE
SPEED
POLE POSITION (C)1982 NAMCO
MALIBU GRAND PRIX - LAPS 4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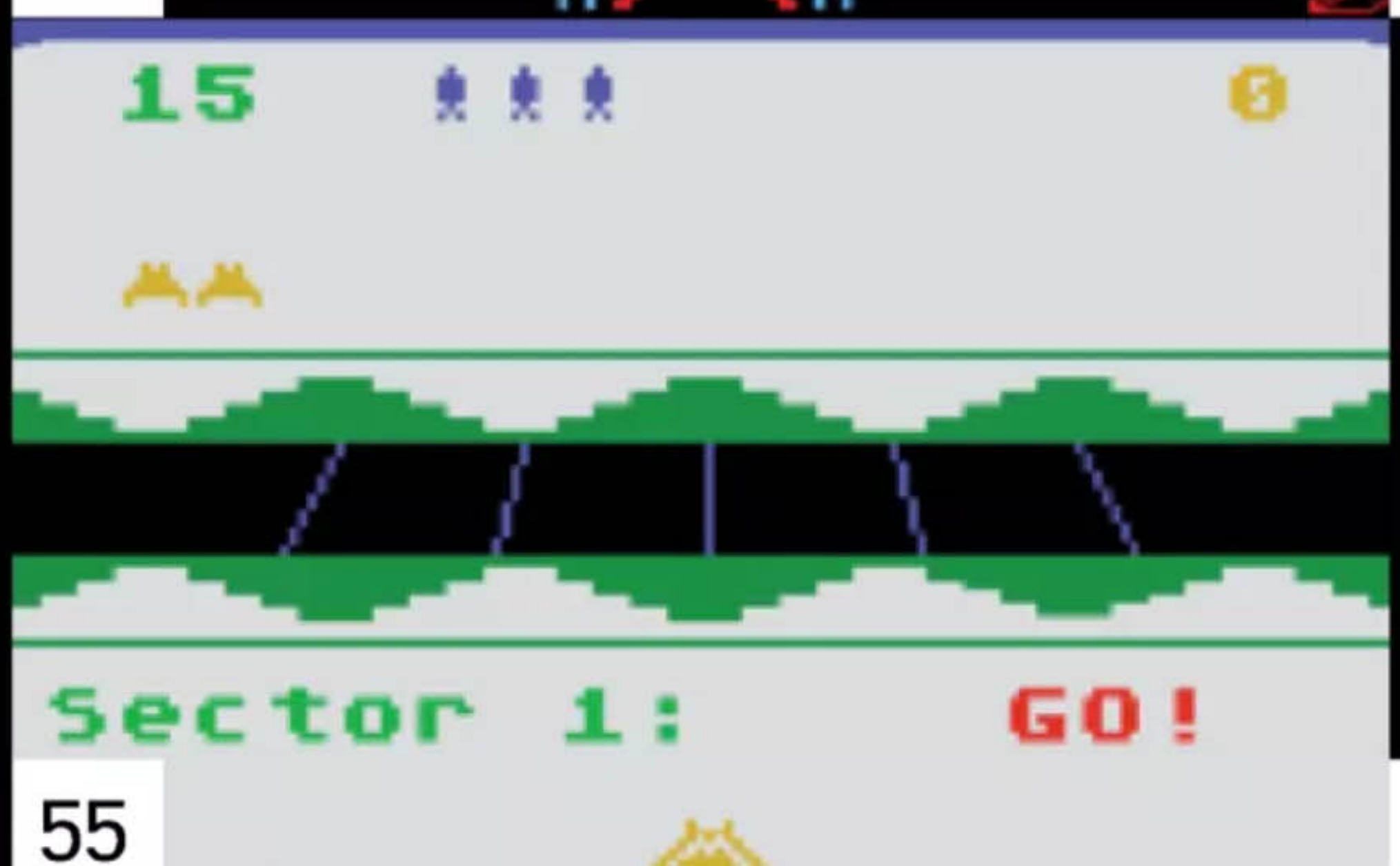
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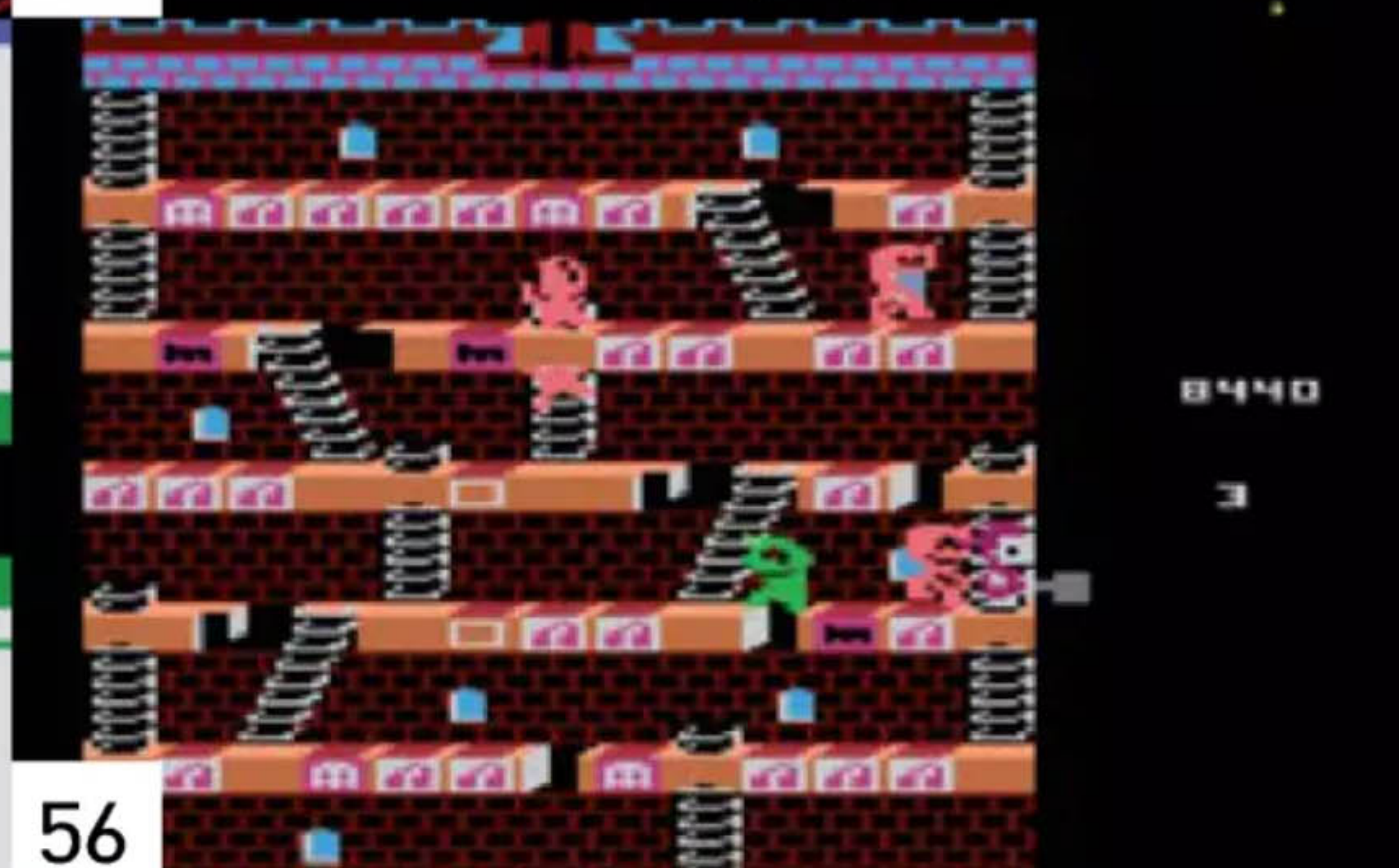
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ATARI 800XL

BROADLY CONSIDERED THE FINEST ALL-ROUNDER IN ATARI'S 8-BIT HOME COMPUTER RANGE, THE 800XL WAS ALSO THE BIGGEST SELLER IN GLOBAL TERMS. BUT DESPITE TOP-CALIBRE SOFTWARE SUPPORT FROM THE LIKES OF LUCASFILM, EA AND EPYX, IT NEVER PENETRATED THE HOME-COMPUTING MARKET TO THE EXTENT OF ITS NEAREST RIVAL, THE COMMODORE 64. MIKE BEVAN TAKES A RETROSPECTIVE LOOK AT THE HISTORY OF ATARI'S UNDERACHIEVING 8-BIT

In the fifth issue of fondly remembered C64 magazine Zzap!64, which hit newsstands in September 1985, Archer Maclean penned a tips guide for his classic shoot-'em-up *Dropzone,* which contained the oft-quoted (and misquoted) following comment. "The Atari, being the Porsche of home computers is capable of running *Dropzone* 2.5 times faster than the 64 and can handle any amount of blobs on screen. However, the 64 is still a respectable BMW 316 (S reg)." It was an unusual statement to find in a Commodore-oriented publication, and while Retro Gamer prefers to remain neutral in any debate regarding the technical superiority of either of the two competing machines, Archer may well have had a point. Especially as Atari's home micro was far better than many often said it was.

The comparison game

Compared to the more popular home computers of the day, such as the ZX Spectrum and C64, Atari's computers were often regarded as high-end, and came equipped with an equally high-end price tag. In 1984, the newly released Atari 800XL, the computer designed to compete with the C64, was priced at around £250, considerably cheaper than its older sibling, the Atari 800, which had been on launch in the US, but far more expensive than the Spectrum (£130) or C64 (£199). A higher price point than the more popular machines, and an over-reliance on the expensive cartridge format plagued Atari computer software. However, many classic games that originated on the Atari 8-bit computers, were faster and more refined than the now often better-known conversions on other contemporary platforms. But by the mid-Eighties, Atari had found to its cost that high-quality software, flashy technical specifications and above average build-quality simply wasn't enough to win in the fight for the hearts and minds of hobbyists and computer dealers whose main concern was competitive pricing.

In hindsight, Atari's relative failure with its 8-bit home computer range, at least in terms of longevity compared to its rivals, seems harsh when you consider that they were very much ahead of their time in conception. Work began on the company's first two home computer systems, the Atari 400 and 800, after the release of the 2600 console in 1977. "We knew we needed to leapfrog the 2600 before somebody else did," says Atari designer Joe Decuir. "We saw the Apple II, Commodore and Radio Shack machines coming, and we wanted to design a machine that would support home computer characters and bitmap graphics." Another member of the 400/800 dev team was Jay Miner, future 'Father of the Amiga', who headed design of the graphics display/output chips known as ANTIC and CTIA. A third custom chip (POKEY) handled peripheral input/output and sound, and these separate co-processors freed up the main CPU, improving performance. An industry first, the concept of separate dedicated chips to drive graphics and sound would be taken to its logical extreme when ex-Atari employees, including Jay, were hired by Commodore to produce its first 16-bit home computer a few years later.

INSTANT EXPERT

Atari 800XL

- The Atari 800XL was one of the third generation of Atari 8-bit home computers, and was preceded by the Atari 400, 800 and 1200XL. It is backwardly compatible with most software. It was Atari's bestselling 8-bit computer system worldwide.
- Atari's home computers were the first to use special custom processors for graphics and device input/output, which freed up the main CPU for other tasks, a concept used by developers Jay Miner and Joe Decuir, on leaving Atari, for the design of the Amiga.
- The Atari 8-bit computers were based on a 1.79MHz 6502 CPU, a considerably faster clock speed than its competitor, the C64, which had a 1MHz 6502 processor. As a result many maths-intensive titles, such as *Rescue On Fractalus!*, were faster on Atari machines than on the C64.
- The 800XL had a little brother, the Atari 600XL, which was effectively the same machine but came equipped with 16K RAM, as opposed to the 800XL's 64K, and lacked the 800XL's composite video output.
- The custom graphics chips in the 600XL/800XL computers were called ANTIC and GTIA, and offered sprite handling, advanced hardware scrolling and collision detection, and up to 256 colours (as opposed to the C64's 16-colour palette).
- Four sound channels were available, originating from the Atari 800XL's custom POKEY chip, which also handled peripheral input/output. It was co-designed by Star Raiders creator Doug Neubauer.
- A number of classic cross-platform 8-bit system games were initially programmed for Atari computers, including *Ballblazer, Rescue On Fractalus!, M.U.L.E.* and *Archon.*

FEUD
ATARI 800XL/130XE
SNOOKER
ATARI 800XL

DATAFILE

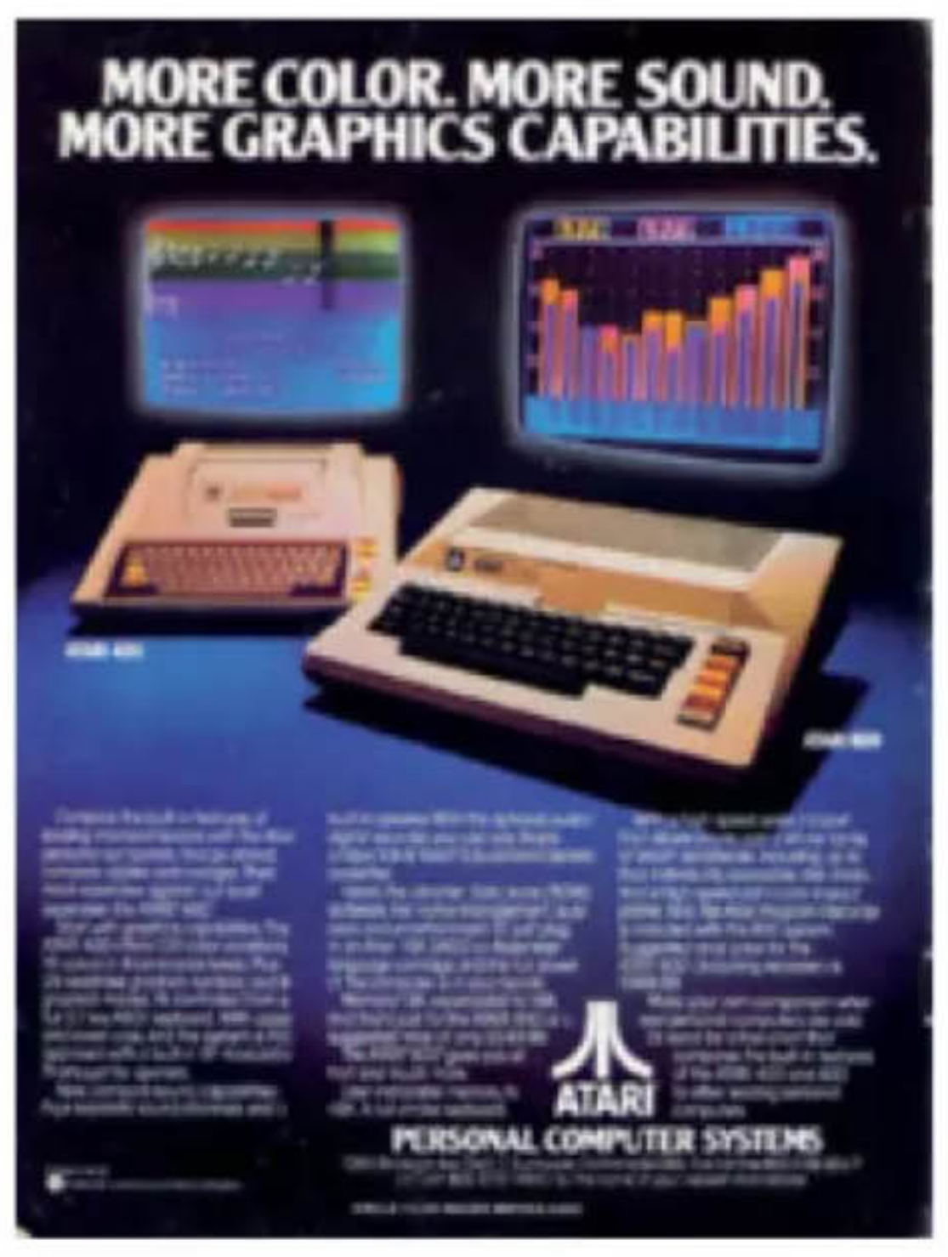
YEAR RELEASED: 1983

ORIGINAL PRICE: US: $299, UK £249

BUY IT NOW FOR: £15+ ($60+)

ASSOCIATED MAGAZINES: ATARI USER, PAGE 6 (UK), ANTIC, ANALOG (US)

WHY THE ATARI 800XL WAS GREAT… OF ALL OF ATARI'S 8-BIT HOME COMPUTERS IT WAS THE MOST COMPETITIVE ALL-ROUND PACKAGE, WITH A FULL 64K RAM, BUILT-IN BASIC, GREAT AUDIO/VISUAL CAPABILITIES AND A DECENT, COMPACT CASING AND KEYBOARD. PROGRAMMERS LOVED THE QUIRKS AND CUTTING-EDGE CAPABILITIES OF ATARI'S HARDWARE, AND SOME OF THE GAMES SOFTWARE IT SPAWNED WAS TRULY GROUND-BREAKING. MUCH OF THE TECHNICAL KNOW-HOW GAINED IN THE DESIGN OF THE ATARI 8-BIT LINE WENT ON TO BE USED IN THE AMIGA, AND EVEN TODAY'S PCS.


MORE COLOR. MORE SOUND.
MORE GRAPHICS CAPABILITIES.
ATARI
PERSONAL COMPUTER SYSTEMS

» Advertisements for the early Atari 8-bit computers publicised the systems' cutting-edge graphic capabilities and advanced sound compared to those of rival machines.

» Two generations of Atari personal computers. The Atari 400 (top), Atari 800 (middle) and Atari 1200XL (bottom).

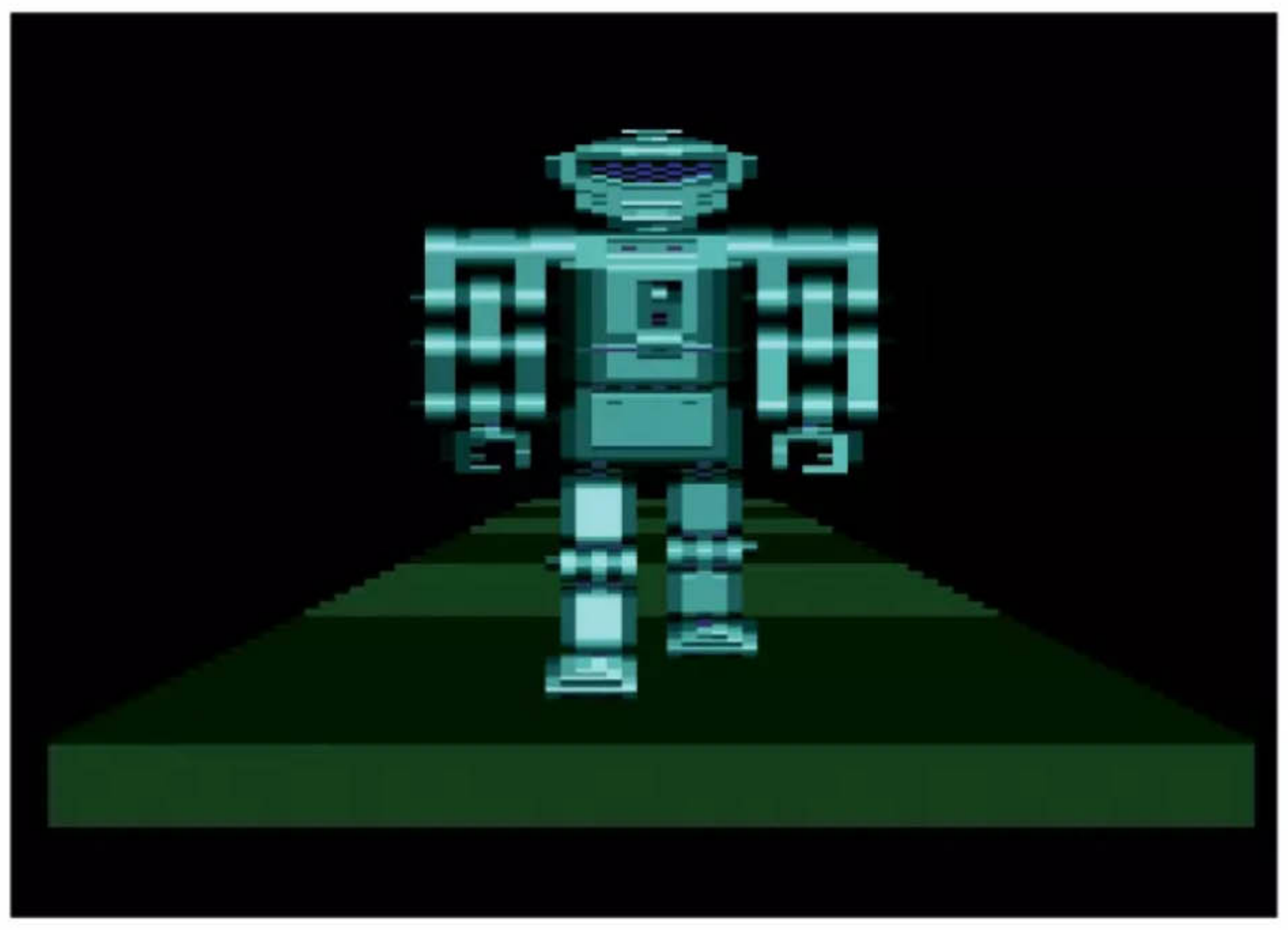
CENTIPEDE COMPUTER GAME
ATARI CXL4020
MISSILE COMMAND COMPUTER GAMES
ATARI CXL4012
SUPER BREAKOUT COMPUTER GAMES
ATARI CXL4006
QIX COMPUTER GAME
ATARI CXL4027
GALAXIAN
ATARI
PAC-MAN COMPUTER GAME
Your greatest challenge lies ahead–and downwards.
ZORK I
INFOCOM
INTERACTIVE FICTION
FANTASY
STANDARD LEVEL
RESET
OPTION
SELECT
START
HELP
POWER

The launch

Debuting in the US in autumn 1979, the Atari 400 and 800 computers sold for $549 and $999 respectively. The 400, with its membrane keyboard was geared towards the home hobbyist and games market and was intended to ship with 4K of RAM. The 800 was designed as a higher-end or business machine, and came equipped with 8K of memory. Both computers were capable pieces of hardware for their time, sporting an unprecedented 128-colour palette, hardware sprites, four joystick ports, and cartridge, peripheral and memory expansion interfaces allowing unheard of levels of customisation. By the time of its launch, falling RAM prices allowed Atari to increase the 400's memory capacity to 8K. Eventually the 400/800 shipped with a standard 16K or 48K of RAM respectively.

Atari's marketing division made considerable efforts to publicise the advanced audio-visual features of its home computer systems, focusing on their unique custom architecture, fast full-colour graphic capabilities and multi-channel sound. Atari CEO Ray Kassar's mandate to the company's design engineers had been that the systems should be invaluable for home and business use and have the capabilities to play exciting, cutting-edge games. Unfortunately, the company's reputation as a videogame manufacturer backfired on its Home Computer Division, as high-end consumers opted for the more business-like Apple II rather than the Atari 800, and gamers found the high cost of the 400 prohibitive compared to the cheaper VCS console. However, Atari did have one considerably powerful ace up its sleeve to lure gamers to its 8-bit computer line.

Doug Neubauer, an Atari engineer and co-designer of the POKEY chip, had developed a game while



» The walking Atari Robot demo, which adorned many a computer shop window, demonstrating the impressive colour palette of the Atari computers.

COMPUTER ADVENTURE
STAR RAIDERS™
BEWARE OF MUTANTS. THE REAL
STAR RAIDERS!
IS ONLY FROM ATARI
ATARI

» **Left:** Atari's 'killer-app' *Star Raiders* perched atop the second-generation 1200XL. **Right:** A magazine advert for *Star Raiders* made a point of highlighting its pioneering first-person play-view.

working at Atari. Inspired by the generic 'Star Trek' games he'd seen running on mainframe systems, Doug took advantage of the new Atari hardware, which he describes as "a quantum leap from the 2600" to update the game with a first-person 3D perspective. Not a huge logical progression by today's standards, except for one fact. No one had ever created a full free-roaming 3D game before. The result, *Star Raiders*, was staggering when first experienced in 1979 as one of the launch titles for Atari's personal computers. It became one of the first examples of a home computer 'killer-app' with many customers purchasing a 400 or 800 and a *Star Raiders* cartridge just to enjoy Neubauer's creation, among them a youthful Archer Maclean. "I saw *Star Raiders* and it just blew me away," he says. "Something very special was happening. I made it my mission to find out what." Another fan, Jeff Minter, couldn't wait to play it. "You can keep your *Elites* and *Wing Commanders*, for me the original *Star Raiders* will always be the best. 8K of sheer 6502 code poetry," he eulogises.

> "YOU CAN KEEP YOUR ELITES AND WING COMMANDERS. FOR ME STAR RAIDERS WILL ALWAYS BE THE BEST"
>
> JEFF MINTER IS CLEARLY A FAN

PROJECT WIZARD

Atari's hard-working engineering department always strived for an experimental approach to design, although a number of ambitious and unusual research projects only ever reached prototype stage. One was Project Wizard, an incredibly strange concept that would have caused somewhat of a stir in the industry had it ever seen the light of day. "It was the first, and only game controller that used your mind," says research engineer Tim McGuinness.

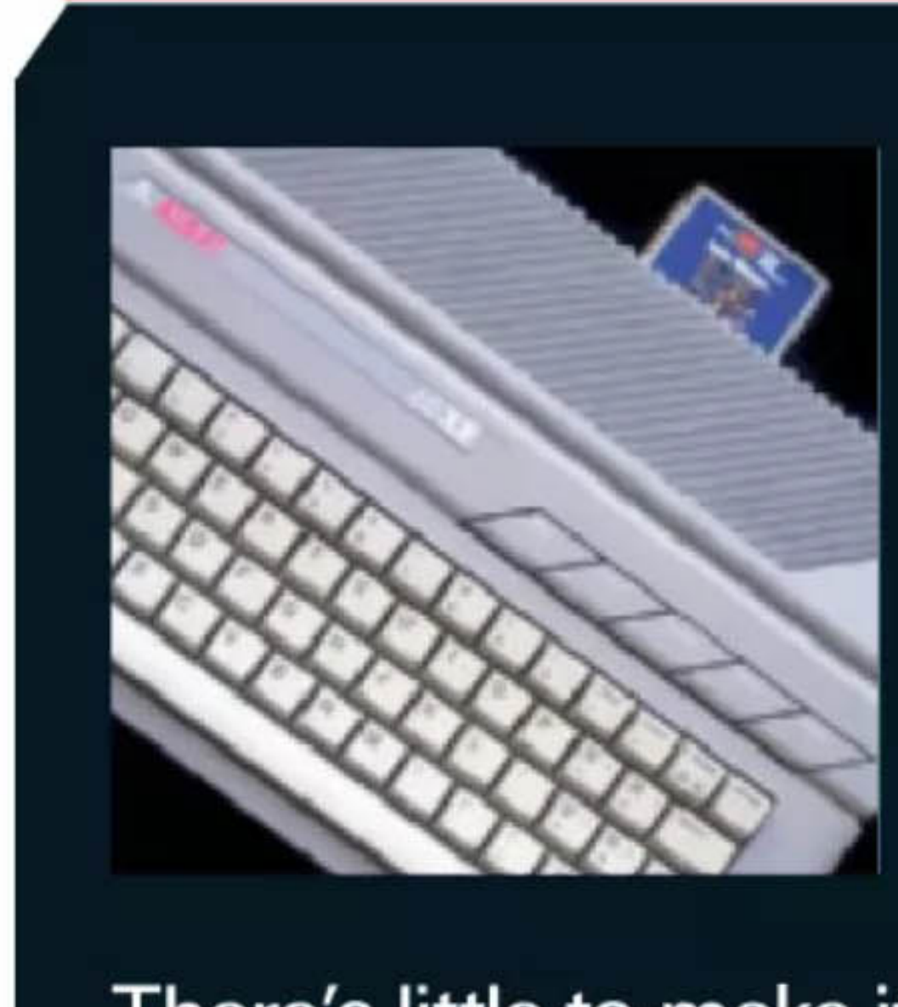
It was created in 1982, and was one of my projects. It used three electrical sensors on the forehead to control right-left motion of the cursor, and was designed for games like Breakout. 1,000 pieces were manufactured under the Atari Wizard Controller name for the Home Computer & VCS lines, but were never released for sale. But it was so cool. You put on a headband with three sensors, and you willed the controller right and left – it took about 10 minutes for most people to get control. Some could control it with blinding speed. I think the main reason it didn't go on sale was the psychological stigma of a computer reading your mind. It actually worked using simple electrical signals, through the skin, but I believe that was the factor. Especially in those days, when the public had no idea of how limited the power of their computers was…"

A further coup came in 1982, when LucasArts (then Lucasfilm) agreed to produce its first two hotly anticipated games, *Rescue On Fractalus!* and *Ballblazer*, exclusively for Atari machines. Both were developed on the Atari 800. "They wanted us to develop for the 2600 since it was their biggest installed base, but we were able to convince them we could do much more impressive games on the newer systems," says *Fractalus!* designer David Fox. "The target platform, initially, was the 5200. The other competing platforms at the time were the Apple II and C64," he continues. "The C64 didn't have much of an installed base then, but the Atari had a great set of chips, allowing us to squeeze a lot more out of the machine than we could on a computer like the Apple, which really had nothing like that." Ultimately, Lucasfilm's titles weren't enough to push Atari's computers into mainstream popularity, not being released until several years after the 5200 versions, and after the C64 had started to emerge as the 'it' machine for consumers. Lucasfilm eventually conceded and converted its games to the C64 and other platforms.

Around the time of the Lucasfilm deal, Atari was set to launch a successor to its 400/800 computers, with which it planned to phase out the older systems and boost flagging sales. Hitting shelves in January 1983, the Atari 1200 was intended as a more 'adult' computer system, and built on the successful 400/800 architecture, adding a professional-looking keyboard, 64K of RAM and improved peripheral support. The machine used a new graphics co-processor (GTIA) with an improved 256-colour palette. This had recently replaced the older CTIA chip in the 400/800 series and would be used in all future Atari 8-bit models. Designed to compete directly with the Apple II, the machine was unsuccessful in the competitive and soon-to-be-crowded market for business systems. There were also compatibility problems with some 400/800 software titles due to the 1200XL's upgraded BIOS. The unpopularity of the 1200XL drove sales of the 800 as consumers raced to purchase the cheaper machine before it was discontinued. The system was an embarrassing flop for Atari, retailed for just four months before the plug was pulled on production. It was never sold outside the US.

» Atari's 1981 computer product-line-up, with the 400 and 800 personal computers taking pride of place in the centre of the picture.

OTHER VERSIONS

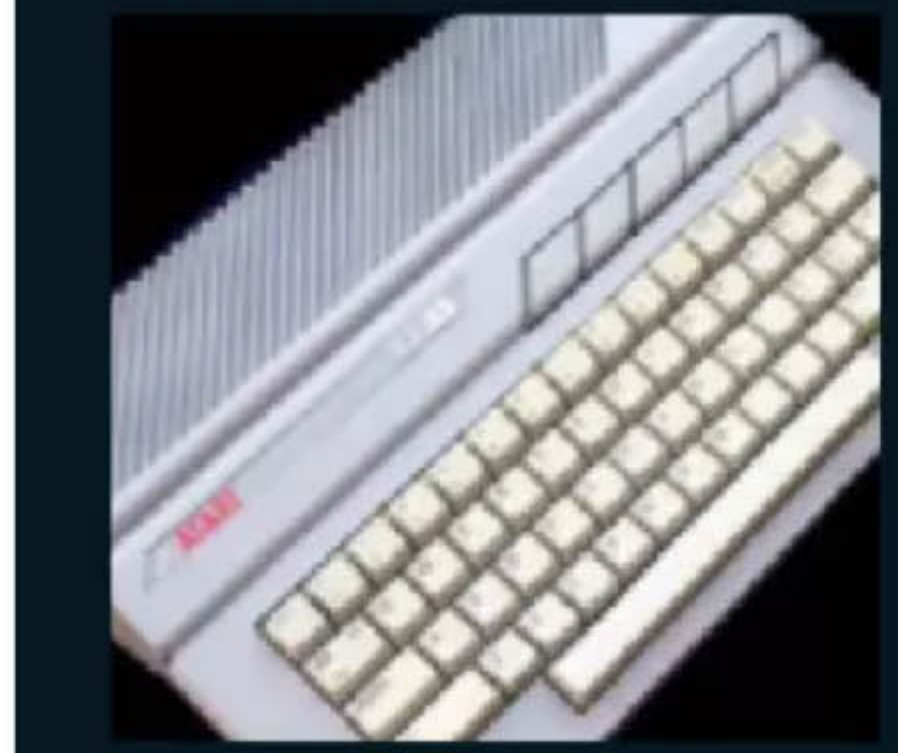


Atari 65XE

This replacement for the 800XL, launched in 1985, features sleeker styling, an updated version of Atari BASIC, and a new memory management chip called 'Freddie'. There's little to make it a better buy nowadays than its predecessor, although its very similar big brother, the 130XE, is worth considering.

XE Game System

Released in answer to Nintendo's NES, this was a modified 65XE computer in console guise (more contemporary looking than the rather dated 5200 console). Add-on features included a detachable keyboard, which was a little 'mushy' in comparison to those of the computer line, and a light-gun. It came with Missile Command and Atari BASIC built-in.



Atari 800XE

The last 8-bit computer to be produced by Atari, the 800XE was almost identical to the 800XL, but with the slim-line casing of the 65XE/130XE computers. It has other similarities to the 65XE, such as the inclusion of the 'Freddie' chip. The 800XE had a short life span, and was sold for only a year.

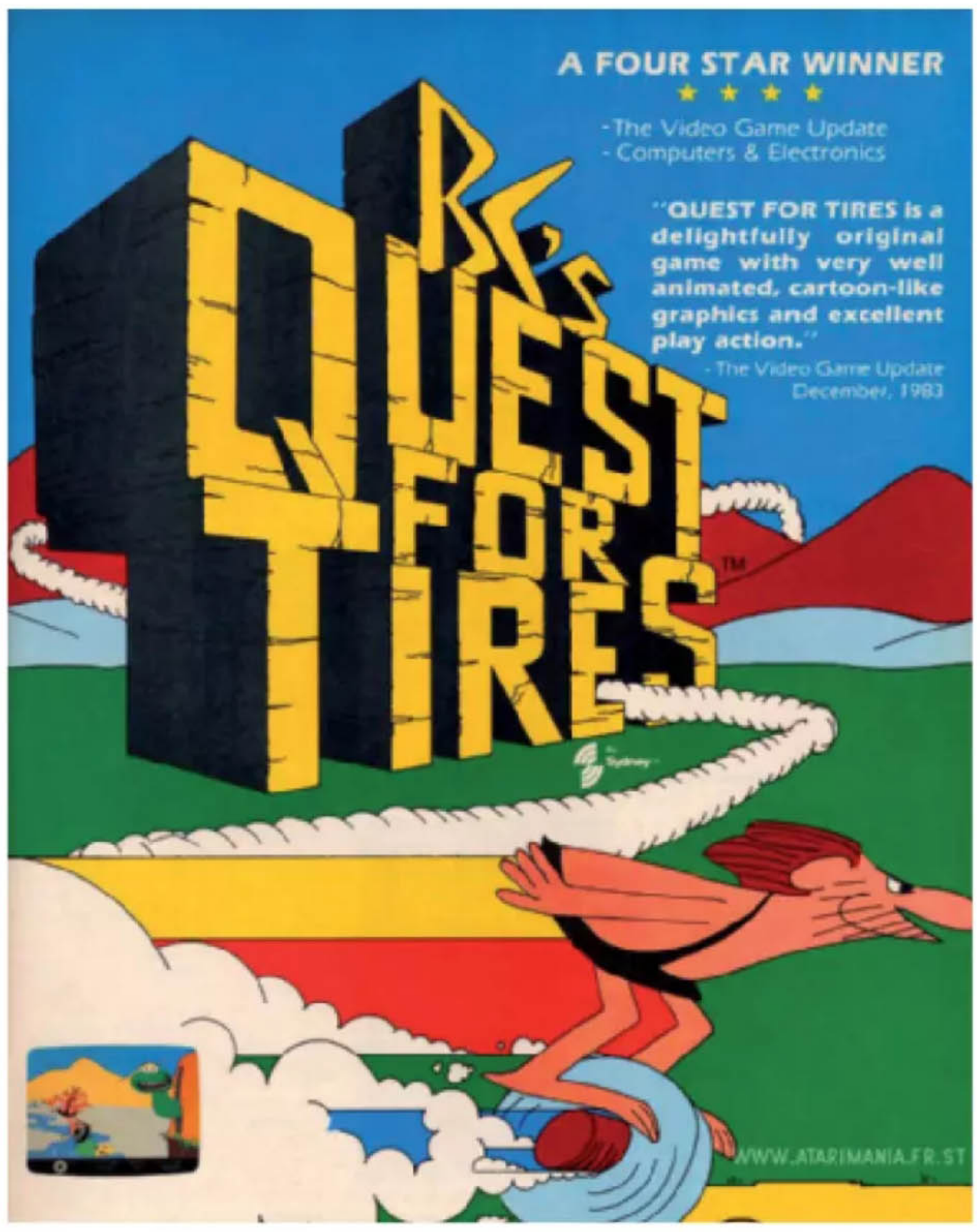
Tim McGuinness, Atari's assistant director for corporate research engineering at this time, was a major player in the design of the 1200 and the later XL models. "Before the release of the 1200XL, Atari had VisiCalc, a few great databases, and a good word processor. In fact, many employees at the company used Atari 800 computers for all business work. But the early Ataris were marketed as home computers and by late 1982 we were months from the release of the IBM PC and first Compaq 'Lunchbox' PC."

The end is nigh

Despite the lack of consumer support for the system, Tim remains proud. "The 1200XL was the big step up from the 800/400 series," he says. "Later systems such as the 800XL were lesser progressions from an evolutionary standpoint." In fact, the machine may have been better received had Atari not been struggling financially. "The company was falling apart in the US, as the major corporate marketing engine was dealing with the collapse of the VCS console market. The home computers were a poor stepchild," says Tim.

In 1983, Atari went for the low end market with the Atari 600XL and 800XL computers. Externally quite similar to the 1200XL, but abandoning the function keys and built-in demos, they were the first machines to include in-built Atari BASIC as standard. The 600XL/800XL came equipped with 16K or 64K RAM respectively and had two joystick ports. The Parallel Bus Interface (PBI) was added, allowing the addition of advanced peripherals. The machines were very much scaled down versions of the 1200XL, and to reduce production costs further following Jack Tramiel's takeover of Atari in 1984, much of the manufacturing was moved to Hong Kong. The price cutting was to try and directly undercut Commodore, who had ejected Tramiel earlier in the year. However, production delays had meant that most of Atari's stock of 600XL/800XL machines had hit retailers too late to compete against the C64 over the Christmas 1983 period, and Atari never managed to catch up with its rival from this point on. Coupled with the collapse of the 2600, Atari was on a slippery slope, and would never again scale the heights of its ascendancy under founder Nolan Bushnell. Despite these problems, the Atari 800XL remains the company's most successful 8-bit computer.

Atari soldiered on under Tramiel with some modifications to its 8-bit computers, such as the XE range and the XE Game System, released in 1987 as a competitor to the NES. In 1992, with its 16-bit ST home computer locking horns against Commodore's Amiga, Atari finally dropped all support of its 8-bit line, 15 years after the series' conception and long past the peak of its popularity. Brilliant and technically ahead of their time, Atari's 8-bits desperately tried to be jack of all trades but fell short of winning the battle against both Commodore and Apple. Perhaps their potential as a gaming platform was never quite realised, which is something of a pity. "Although the Apple II was the obvious target, we also conceived of the 800 as the next-generation gaming machine," says Joe Decuir. "In my opinion it had no peer until the NES came out five years later in Japan." Adds Tim McGuinness: "We still use Atari technology in today's PCs. Our MS DOS floppies use Atari DOS format. USB is the grandson of Atari Serial." Now that's certainly something to think about.

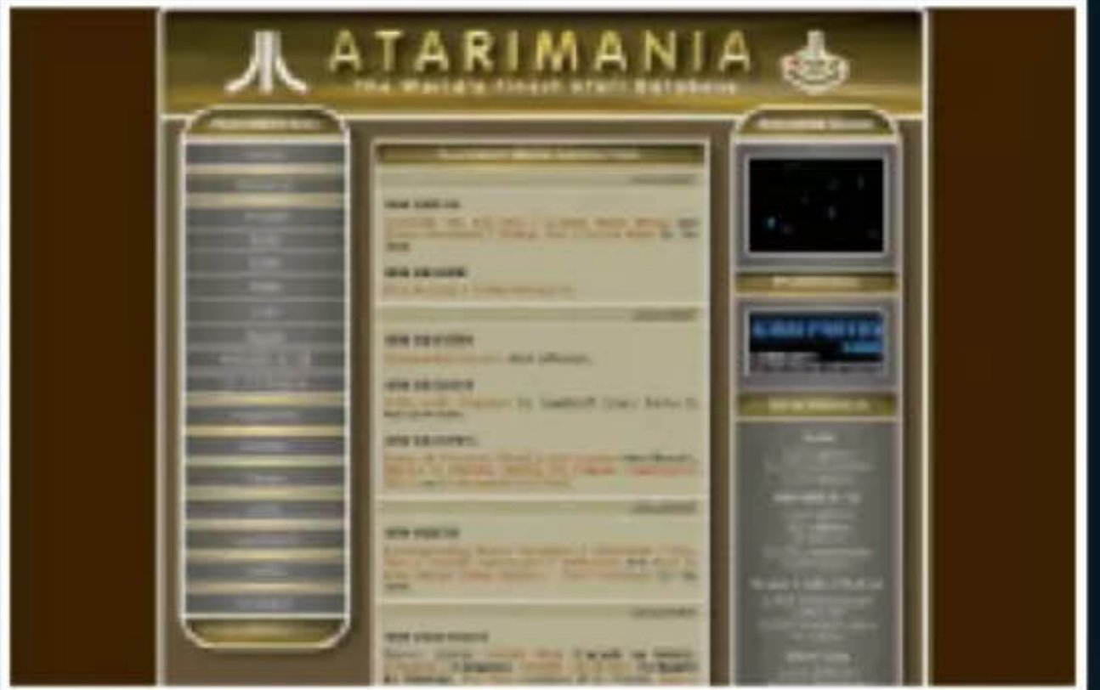

A FOUR STAR WINNER
★ ★ ★ ★
-The Video Game Update
- Computers & Electronics
"QUEST FOR TIRES is a delightfully original game with very well animated, cartoon-like graphics and excellent play action."
- The Video Game Update December, 1983
BC's QUEST FOR TIRES
WWW.ATARIMANIA.FR.ST

» Third-party support from publishers like Synapse, Epyx, Datasoft, First Star and Sierra was a great boost to the Atari home computer software catalogue.

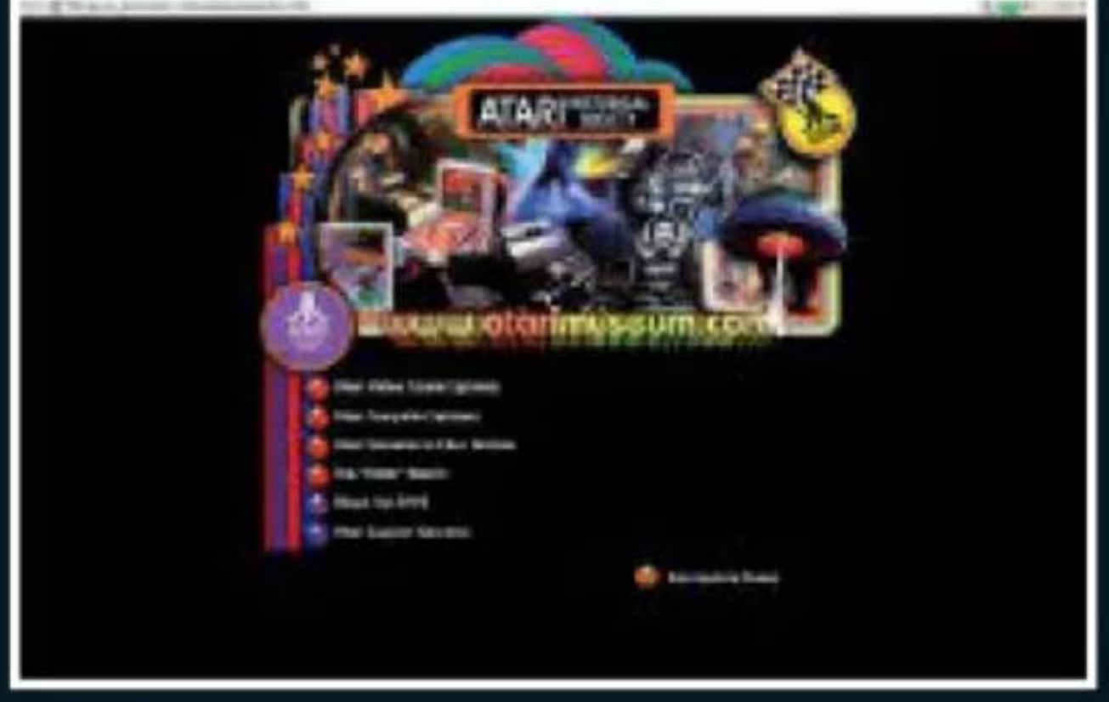
EPYX
PRESENTS
LUCASFILM GAMES
ballblazer
EPYX
PRESENTS
LUCASFILM GAMES
Rescue on Fractalus!
COMMODORE ATARI
C-64 or ATARI

COMMUNITY

THE BEST ATARI WEBSITES



Atarimania
www.atarimania.com
A fabulous resource, in a similar vein to World of Spectrum and Lemon64, this site is a wonderful place to start for an overview of Atari 8-bit hardware and software. Atarimania has an enormous database of downloadable games and software, with screenshots and full-colour manual scans for many titles. It also features the occasional developer interview.



Atari Museum
www.atarimuseum.com
A massively impressive site, with a whole wealth of information covering Atari's 30-year history. Its archives are brimming with first-hand interviews with Atari staff, technical documents, Atari magazine scans, old adverts and press releases, and a bucket-load of other assorted resources. You name it and, if it's Atari-related, it will probably be here.

BACK IN TIME
Atari 8-bit Computer Systems
ATARI

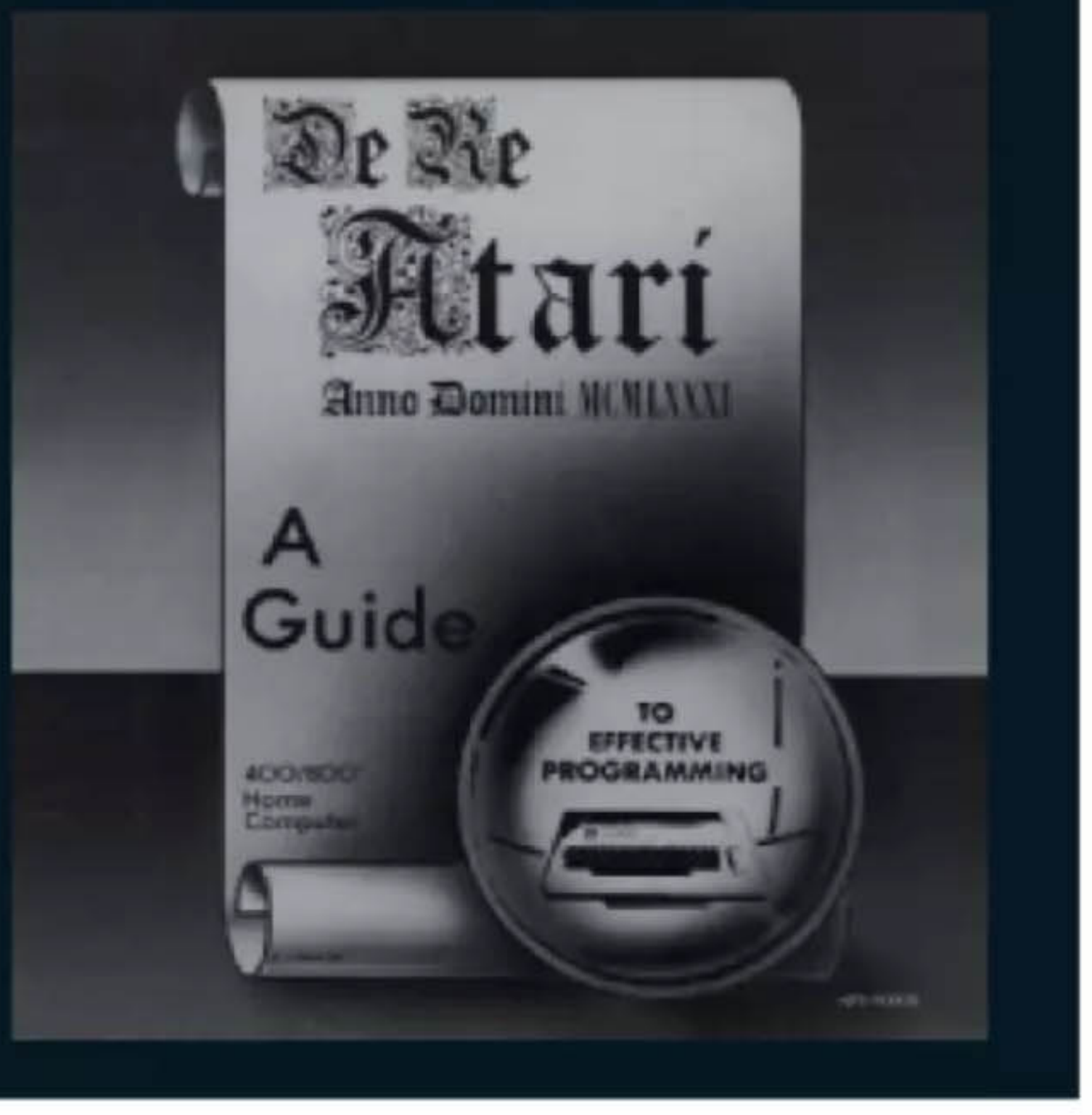
Back In Time
www.backntime.net
Another large Atari-oriented site with information and photos of pretty much every console and home computer model ever released by the famous company, along with features on official and third-party add-ons, and peripherals and unreleased prototype hardware. Check out the radio-show episodes featuring guests such as Sid Meier and Nolan Bushnell.

DE RE ATARI

A long-held popular myth is that Atari deliberately held technical information on its 8-bit computers from third-party programmers, so that its internal developers would have an advantage. It's a rumour that ex-Atari software developer Chris Crawford (of Eastern Front fame) is eager to quash. "When the 400/800 were released, Atari executives assumed that the technical details of those machines would be kept secret, as they were with the VCS. Everybody in engineering knew that was absurd, but it took a while to convince them it would be better to encourage outside software developers. What did the trick was the early press reviews saying that the 400/800 were great machines but didn't have as much software as the Apple II.

In December 1979, they issued a memo saying all technical documentation was now publishable. I had a number of friends in the software community and got on the phone to them. They wanted photocopies of the documentation, which I ran off myself and shipped to them. Thenceforth, all you had to do to get the documentation was to ask. We sent out exactly the same documents that we ourselves used. There was never any attempt to hold anything back after that. However, the documentation was not easy to understand. By December 1980 there were enough developers that I proposed a Software Development Support Group, to assist developers both inside and outside Atari. We wrote De Re Atari to make the documentation easier to understand."

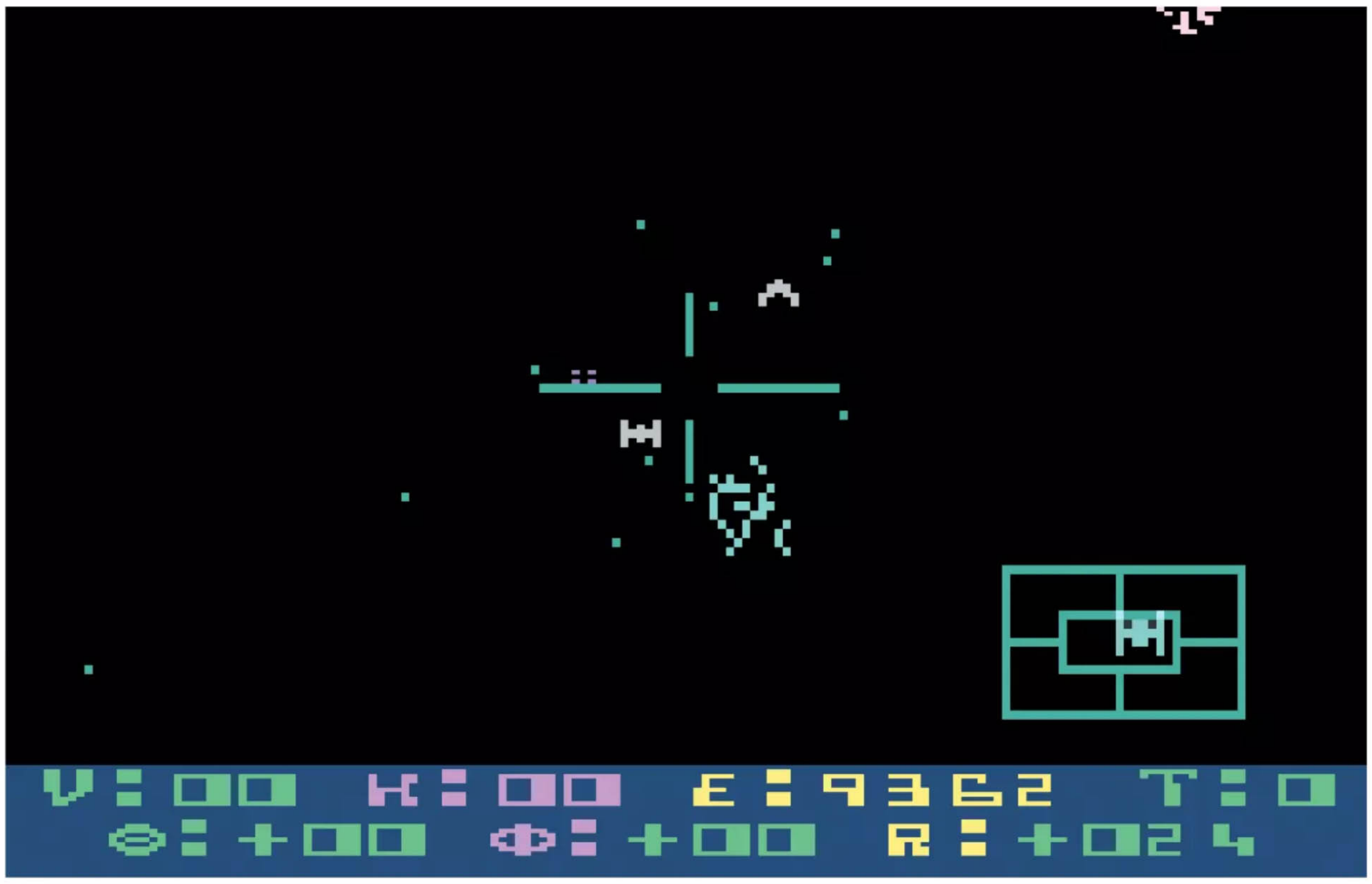
This legendary tome, published in 1982, was an invaluable aid to programmers like Archer Maclean, who likens reading it prior to creating Dropzone to a 'religious experience'. "If we'd started the Support Group sooner I think we could have beaten Apple to become the top 8-bit machine, and fended off the C64," says Chris. "But we didn't. If we'd beaten Apple, I might not be typing this on my Macintosh!"



Thanks to Tim McGuinness and Mike Cartledge for supplying several machine images, and soundhog for the loan of Atari software.

ATARI 800XL: PERFECT 10 GAMES

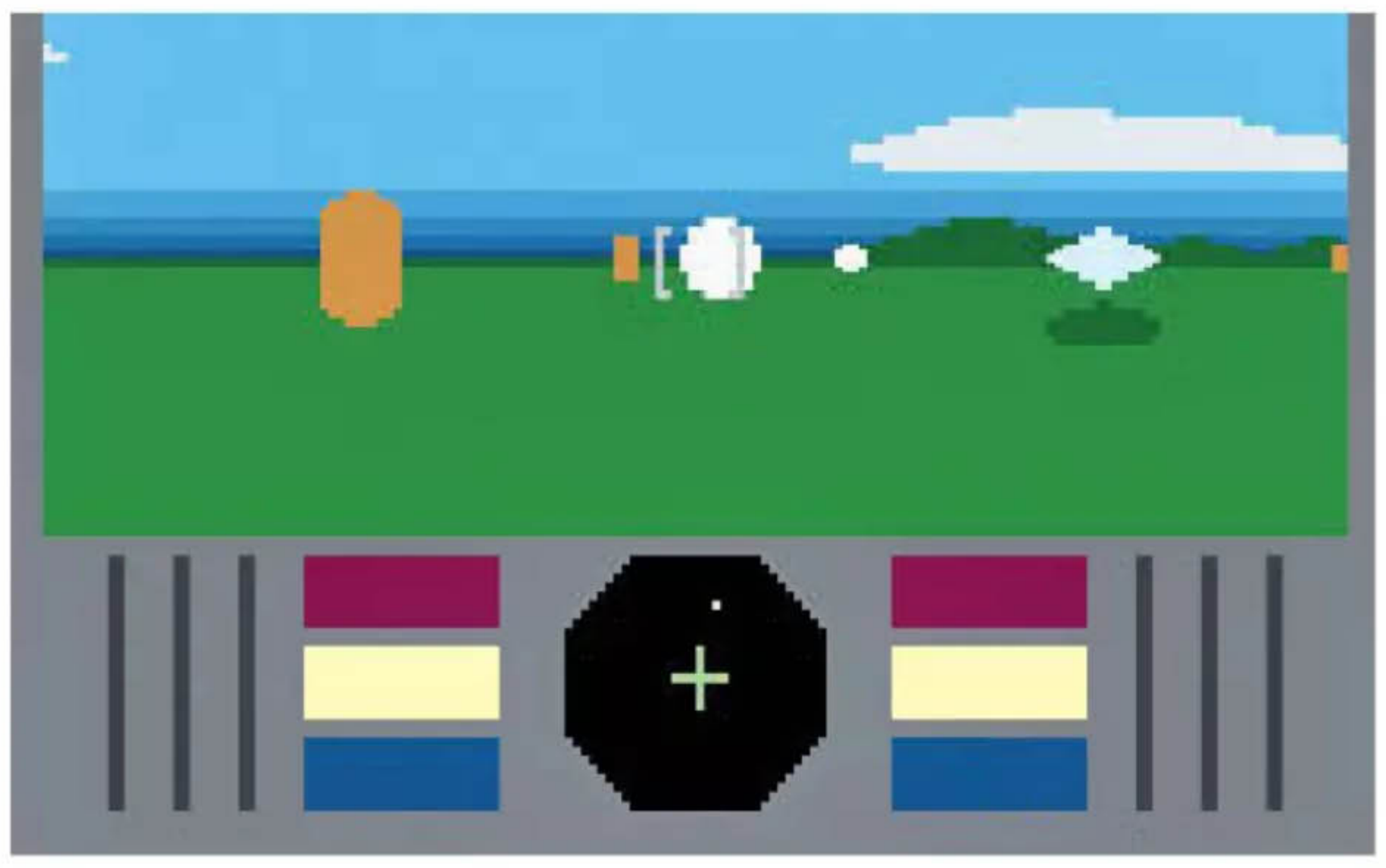
THE ATARI 8-BIT PERSONAL COMPUTERS WERE PRIVY TO SOME OF THE MOST IMPRESSIVE GAMES OF THEIR TIME, AND THE ATARI 800XL IS STILL A GREAT PLATFORM ON WHICH TO EXPERIENCE THEM. HERE ARE OUR FAVOURITES



STAR RAIDERS

» RELEASED: 1979 » PUBLISHED BY: ATARI
» CREATED BY: DOUG NEUBAUER

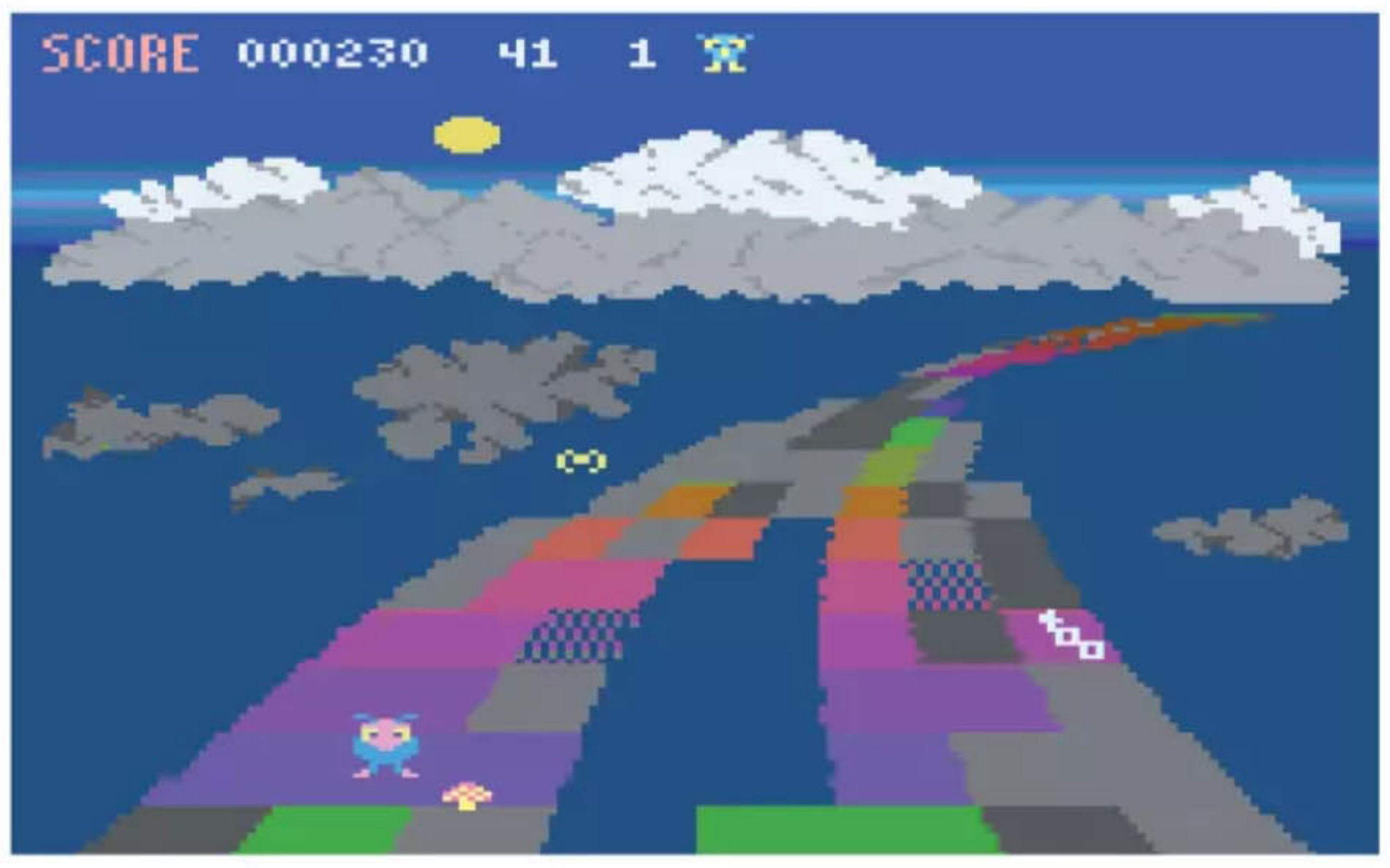
1 Hugely influential to many of those that witnessed it on Atari's fledgling personal computers, Star Raiders was the title responsible for shifting more Atari 400/800 machines than any other. The granddaddy of the *Elite*-style 'space opera', it was also the world's first free-roaming first-person perspective game. Updating the generic 'Star Trek' games played by many a college student on mainframe systems, it was a striking mix of strategy and fast, immersive graphics that effortlessly sucked players into its universe. Criminally, the game's creator, Doug Neubauer, didn't make a single penny from *Star Raiders*, which he created in his spare time while he was employed as an Atari design-engineer. An instant classic that must not be missed.



ENCOUNTER

» RELEASED: 1983 » PUBLISHED BY: NOVAGEN SYNAPSEN » CREATED BY: PAUL WOAKES

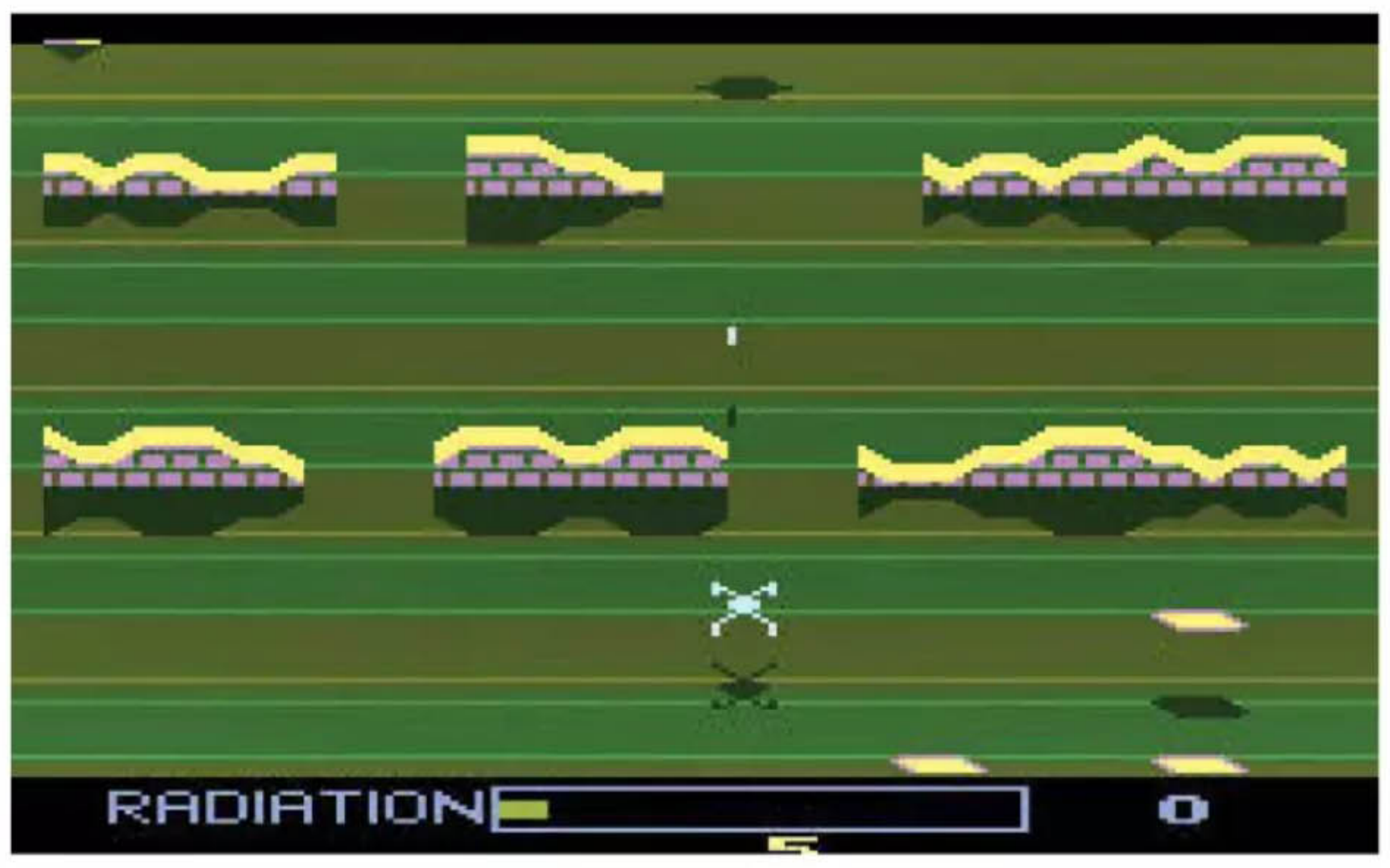
2 *Encounter* was so good that when Jeff Minter first saw the game demoed at a computer trade show he hastily convinced author Paul Woakes to make it a full commercial product, giving birth to software house Novagen and paving the way for *Mercenary*. Playing out the mechanics of *Battlezone*, at what seems like around a thousand miles per hour, and with filled, solid objects zooming in and out of the screen, Encounter! was a technical marvel. And the impressively scary 'warp-sequence' between levels, which flings hundreds of enormous Ping-Pong balls at you while you struggle to avoid a collision, will still leave you squirming.



RAINBOW WALKER

» RELEASED: 1983 » PUBLISHED BY: SYNAPSE
» CREATED BY: STEVE COLEMAN

3 *Rainbow Walker* is a unique and extremely playable title that is totally exclusive to the Atari 8-bit systems. Borrowing the colour-filling mechanics of *Q*Bert* and transposing them onto a chequered pseudo-3D scrolling play-field, its impressive z-axis scrolling utilises the Atari's unique graphic capabilities very nicely. Guiding our rotund hero Cedric across a series of aerial platforms fills in squares with a spectrum of colours, and moving up or down at either vertical extremity scrolls the patterned play-field towards or away from you. Enemy creatures can, and will, undo all of your hard work and must be avoided or 'pushed' off the scrolling rainbow.



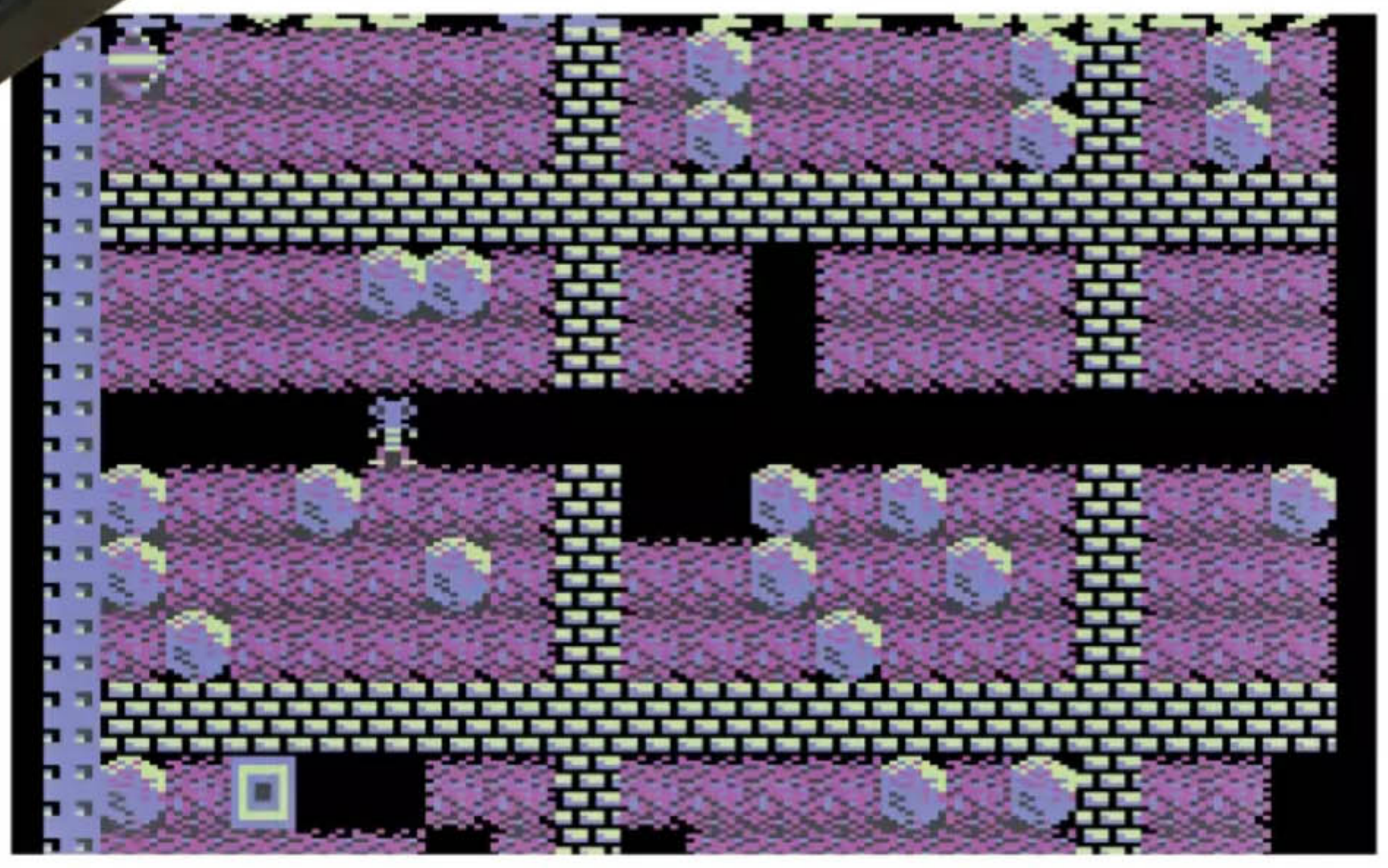
PASTFINDER

» RELEASED: 1984 » PUBLISHED BY: ACTIVISION
» CREATED BY: DAVID LUBAR

4 Despite a limited release by Activision (it remains one of the hardest titles to track down), *Pastfinder* is a great progressive shoot-'em-up which makes good use of the Atari's unique hardware. Helming a frog-like craft (the 'Leeper') your task is to explore a hostile planet while hunting down long-lost alien 'artefacts'. The scrolling forced-perspective terrain (resembling a top-down *Zaxxon*) is highly atmospheric, with great use of shadows, and the Leeper is a wonderfully charismatic creation with a superb control 'feel'. There's a huge *Star Raiders*-style strategy-grid to traverse in search of ancient loot, making David's game superb fun.

INFOCOM
ZORK I
CENTIPEDE
MISSILE COMMAND
SUPER BREAKOUT
QIX
GALAXIAN
ATARI
PAC-MAN

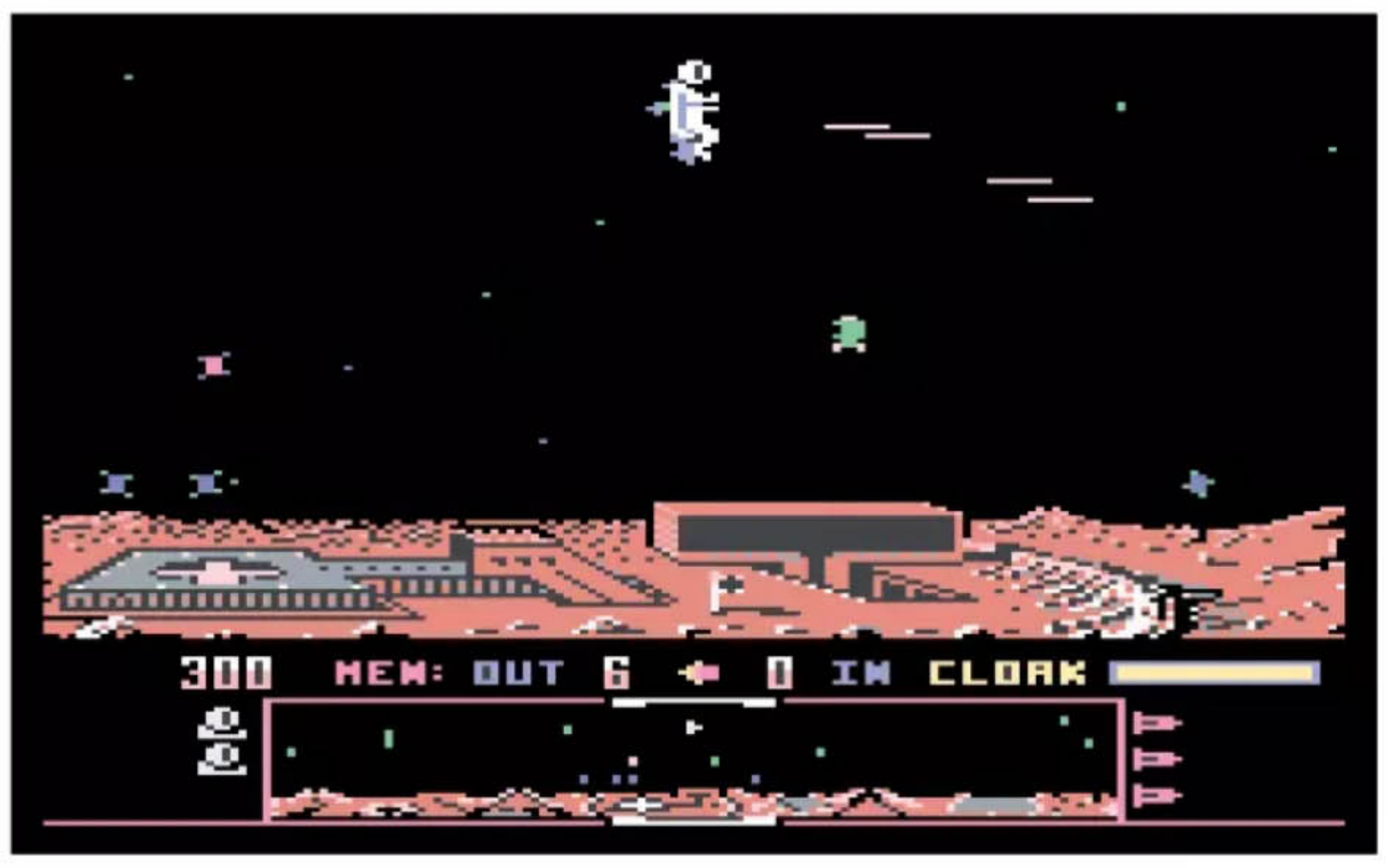
> **"THE DEFINITIVE VERSION OF THE GAME, RUNNING FASTER THAN THE COMMODORE 64 CONVERSION"**
>
> GET THIS VERSION OF RESCUE ON FRACTALUS!



BOULDER DASH

» RELEASED: 1984 » PUBLISHED BY: FIRST STAR SOFTWARE » CREATED BY: PETER LIEPA

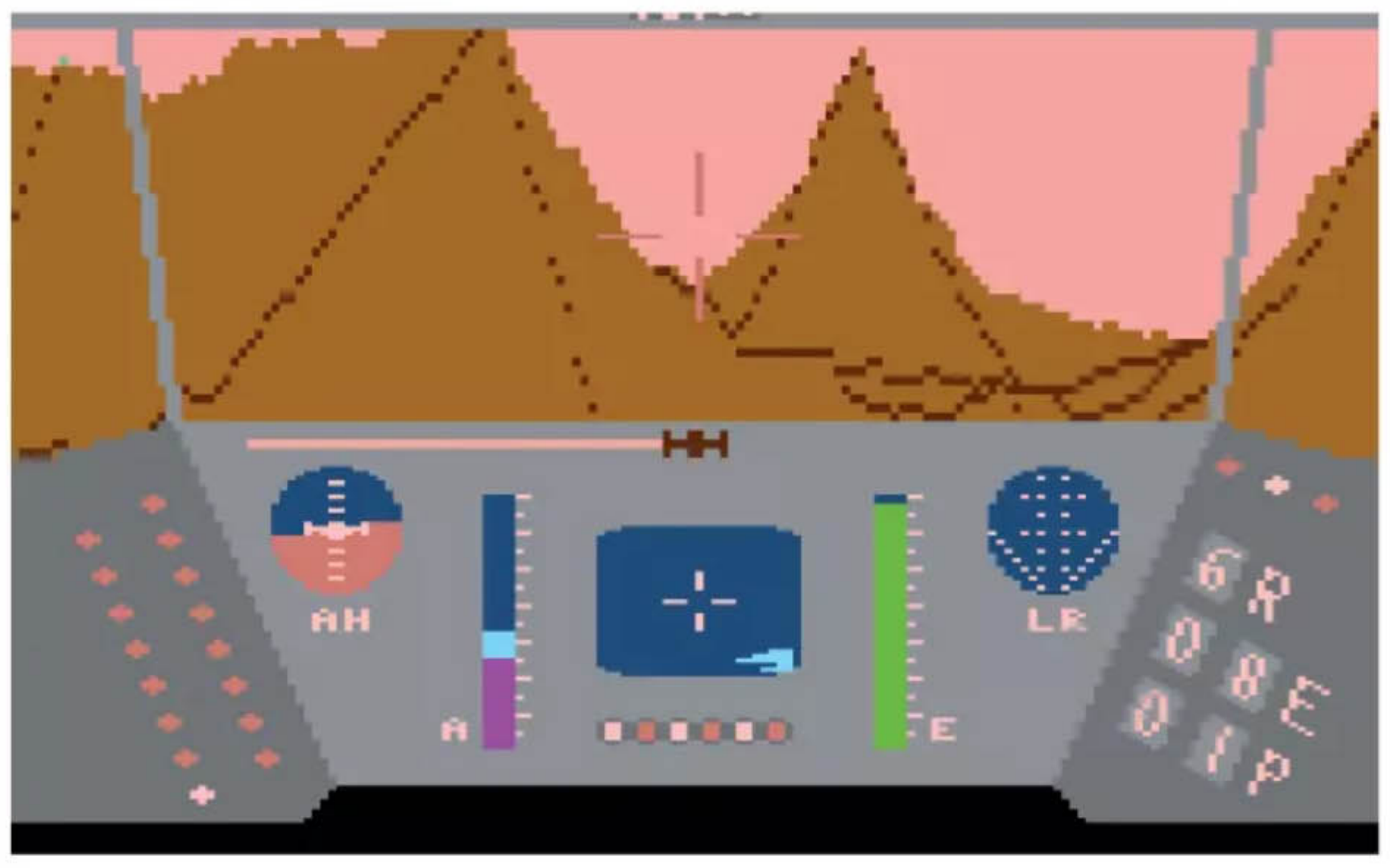
5 At the risk of being predictable we couldn't really leave *Boulder Dash* out of our Perfect Ten. Developed for the Atari 400/800 by Peter Liepa and Chris Gray, its beautiful gameplay (inspired by *The Pit*, an arcade game co-created by Andy Walker of Taskset fame) has been enthralling generations of gamers on various platforms for over 20 years, and its hero, Rockford, is a bona fide gaming icon. The dynamic physics, the predetermined 'rules' for enemy creatures, and the thought-provoking puzzle-like nature of the game were all masterstrokes, making Peter Liepa's game a true classic that never gets old.



DROPZONE

» RELEASED: 1984 » PUBLISHED BY: US GOLD » CREATED BY: ARCHER MACLEAN

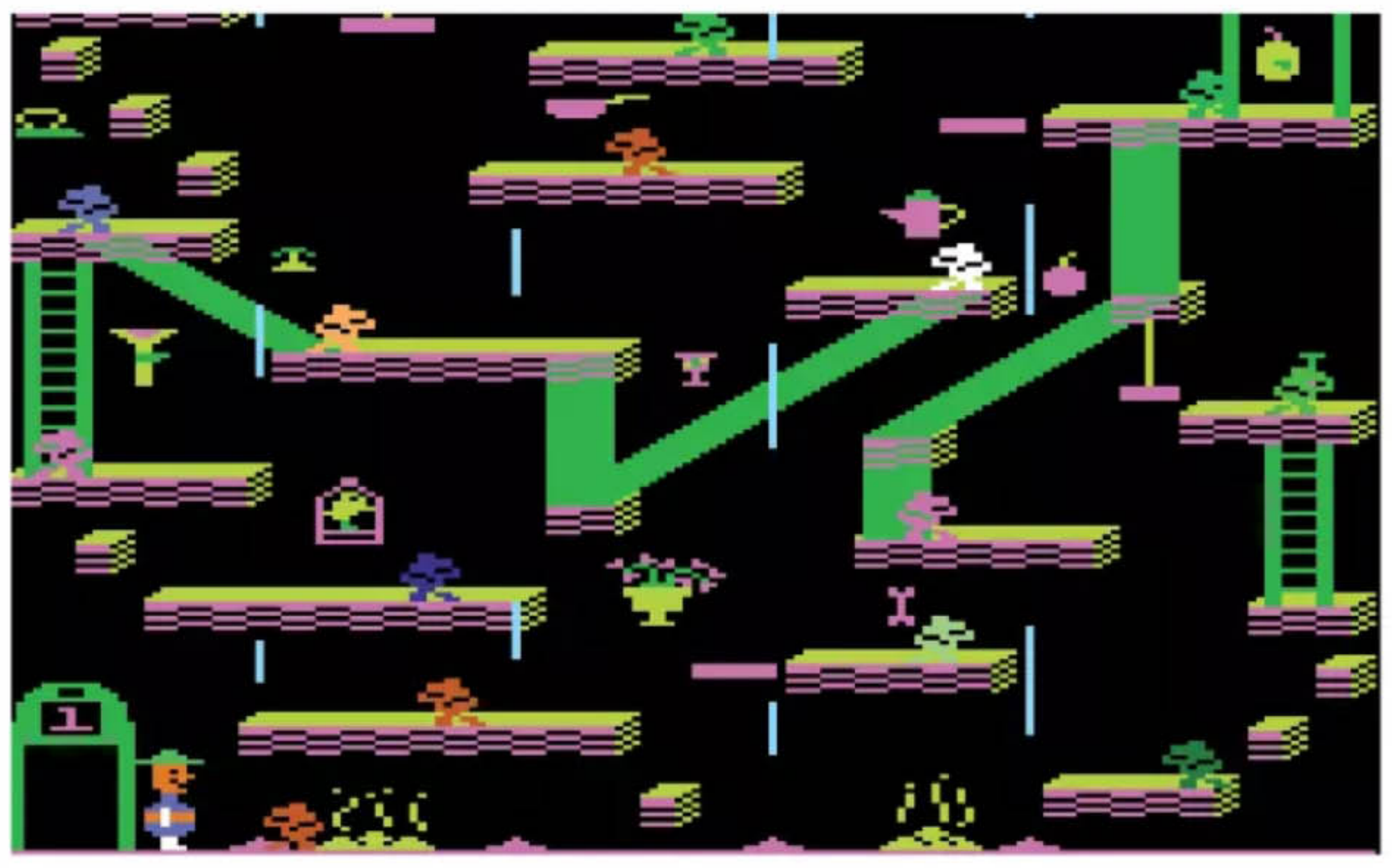
6 With *Dropzone*, a young Archer Maclean took a large helping of *Defender*, a sprinkling of *Jetpac*, and cooked up a brilliant and blisteringly paced Jarvis-esque mega blast. Like a fine wine, *Dropzone* has aged remarkably well, and the original Atari version is most definitely the finest vintage on offer. Considerably bettering Atari's already very decent *Defender* conversion, Archer's magnum opus displays an incredible eye for detail and pushes the Atari hardware to the limit with its incredibly rapid smooth-scrolling, pixel-perfect collision handling, incredible particle effects and fantastic playability. A fantastic, hectic blaster.



RESCUE ON FRACTALUS!

» RELEASED: 1985 » PUBLISHED BY: ACTIVISION/ EPYX » CREATED BY: LUCASFILM GAMES

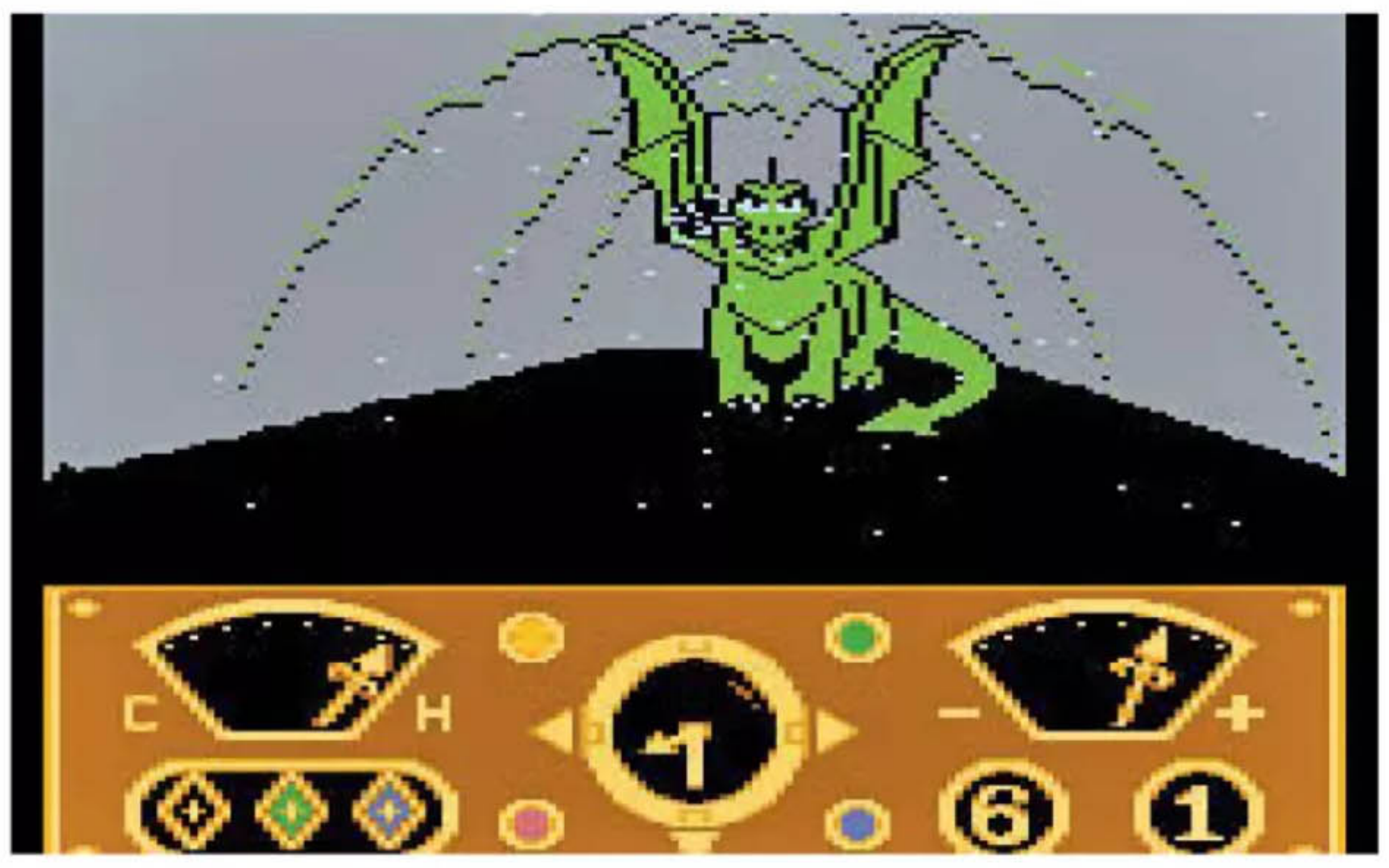
7 If *Star Raiders* managed to shoehorn a small but significantly impressive corridor of space into an 8K Atari cartridge, *Rescue On Fractalus!* went a step further by cramming a whole planet into a 48K computer. Lucasfilm's first-person fractal flight-sim delivered an incredibly immersive experience, which many thought impossible to achieve. Its release was a defining moment for the Atari 8-bit systems it was originally designed for, wowing gamers on their first exposure to its amazing real-time landscape. The Atari's faster processor means that this is the definitive version of the game, running faster than the C64 conversion.



BOUNTY BOB STRIKES BACK

» RELEASED: 1985 » PUBLISHED BY: BIG FIVE SOFTWARE » CREATED BY: BILL HOGUE

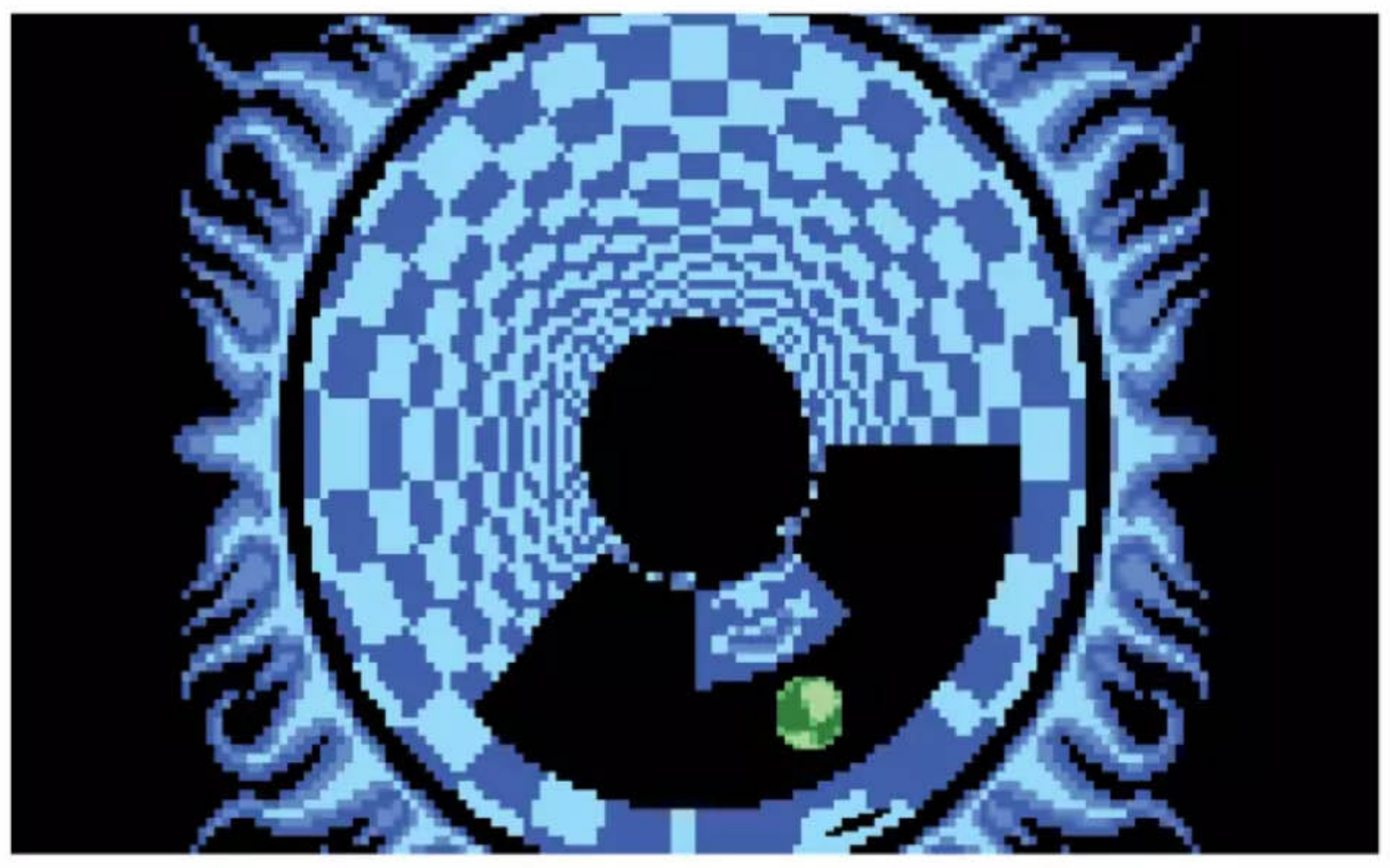
8 Bill Hogue's excellent sequel to his classic *Miner 2049er* is an outstanding platform romp that improves on its predecessor by some distance. Bob's mine now has a satisfyingly solid isometric angled look, and there's a multitude of new contraptions to help (or hinder) our hero. With 25 stages (more than twice the number of the original), and some extremely devious screens with a proliferation of slides, pipes and teleports to scramble your brain, *Bounty Bob Strikes Back* will test your platforming skills to the max but have you coming back for more. An excellent platformer that simply gets better with age.



THE EIDOLON

» RELEASED: 1985 » PUBLISHED BY: ACTIVISION/ EPYX » CREATED BY: LUCASFILM GAMES

9 Probably the most ambitious, original and downright atmospheric title of Lucasfilm's fractal triptych, *The Eidolon* was scaring the nappy-filler out of gamer's many years before *Doom* or *Resident Evil* were. By cleverly inverting the fractal mountains from *Rescue On Fractalus!* and *Koronis Rift*, Charlie Kellner created an incredibly engrossing first-person subterranean adventure with strange revelations and fascinating beasties lurking around every corner. The creatures themselves are all great characters, from comical lowly minions to the game's famously impressive dragon guardians, and still send shivers down your spine.



YOOMP!

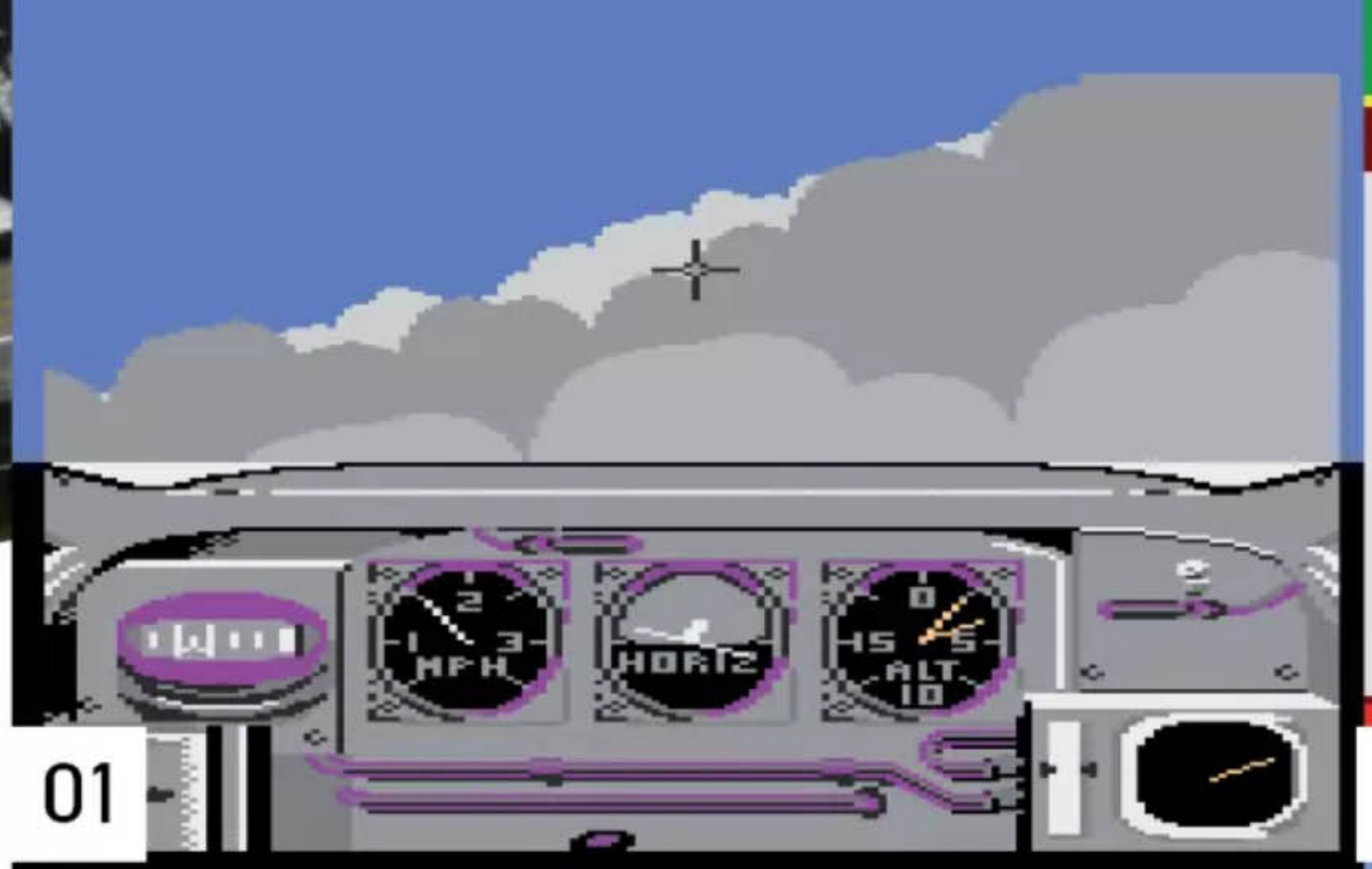
» RELEASED: 2007 » PUBLISHED BY: N/A » CREATED BY: MARCIN ZUKOWSKI AND TEAM

10 Imagine playing *S.T.U.N. Runner* (apparently we're not supposed to mention *Trailblazer*) with a bouncing ball in a psychedelic tubular playing field to a stonking soundtrack. Actually, imagine no more, just grab *Yoomp!* instead. This excellent title was created by a Polish programming team, and was inspired, according to its developers, by an old Bullfrog DOS game called *Tube*. Whatever its influences, however, this freeware masterpiece deserves to be played by as many players as possible, which is why we've it's been included here. Fire it up, grab a joystick, disengage your mind from the niggling background music and enter the zone.

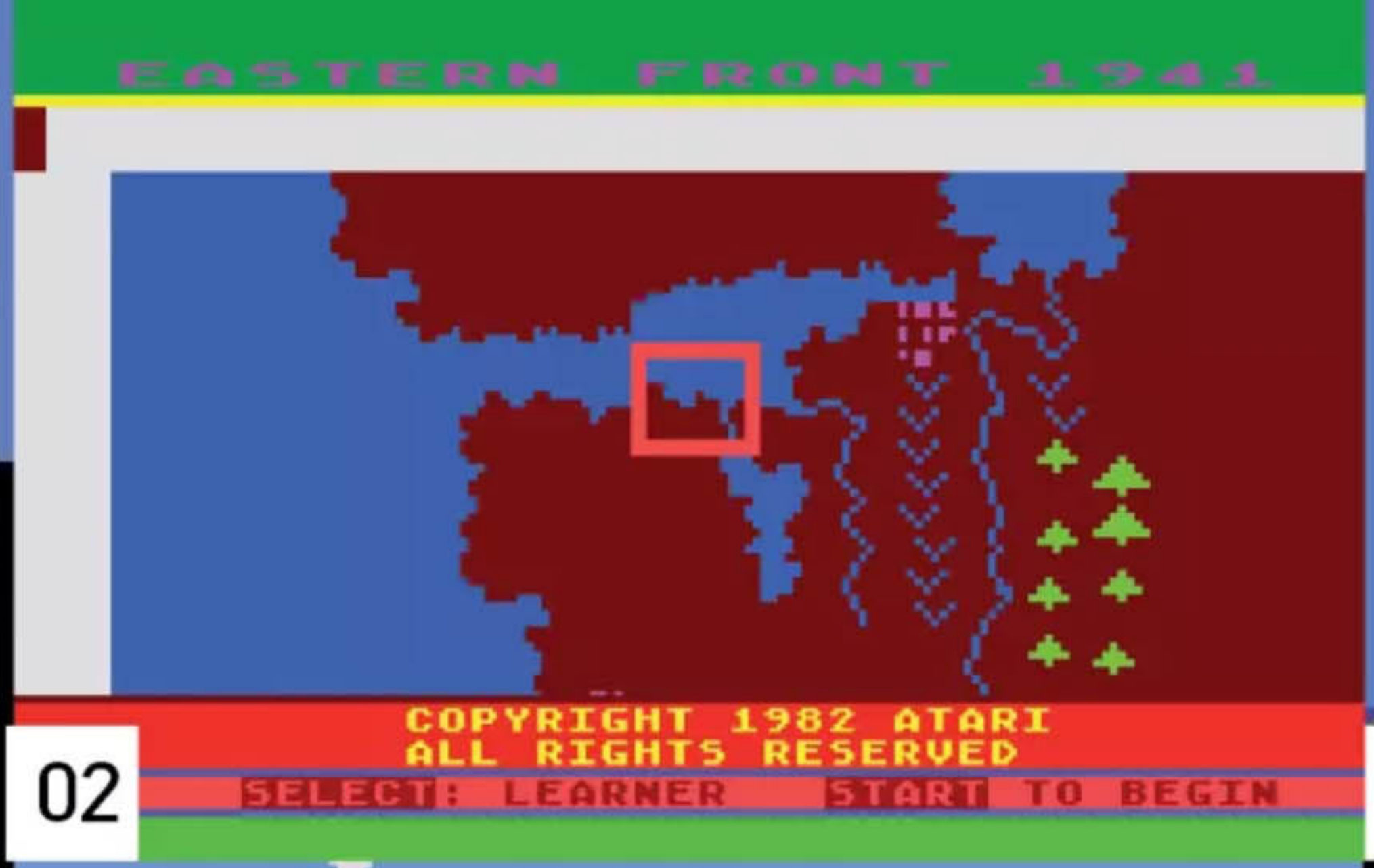
ATARI 800XL

AND THE REST…

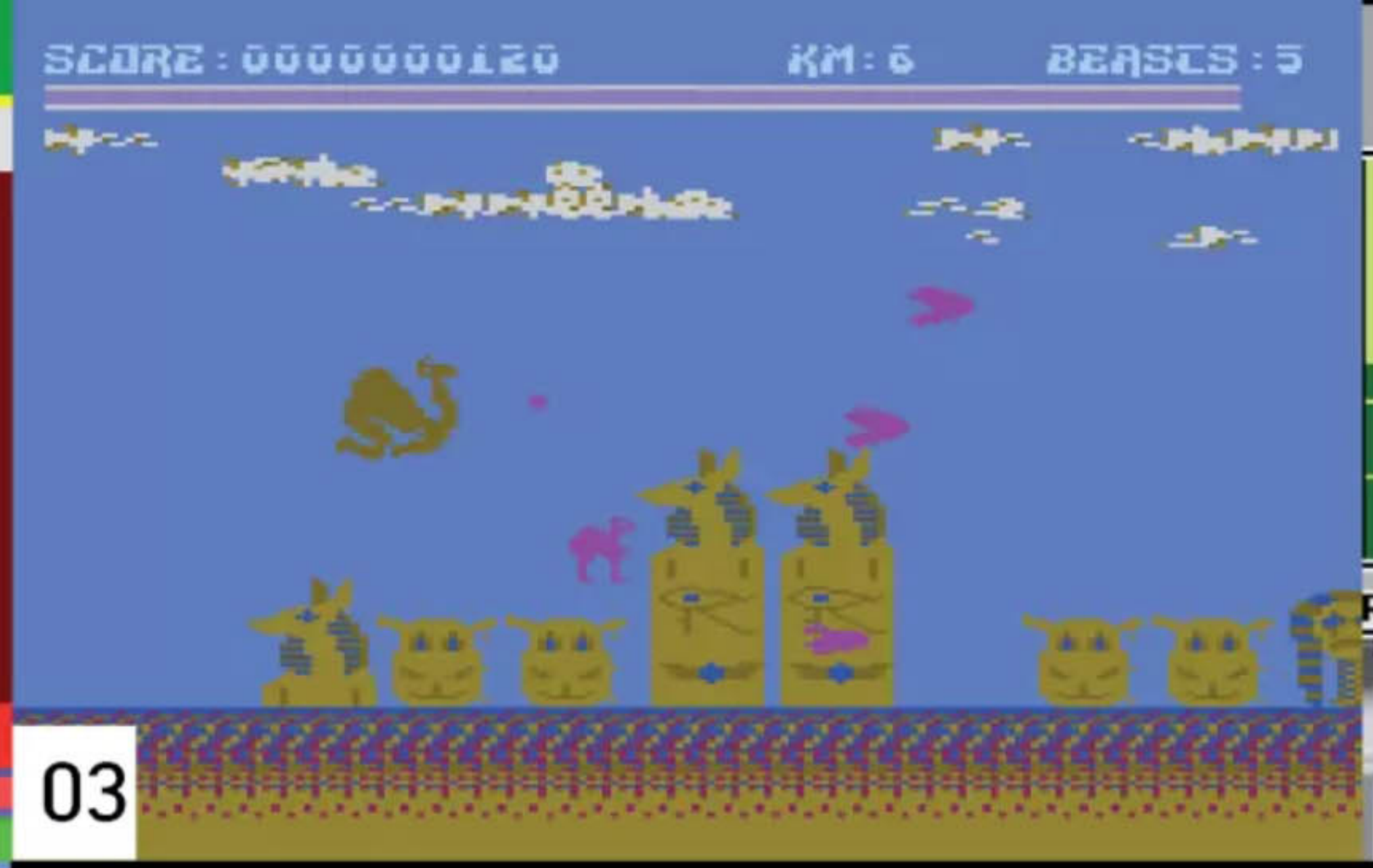
With so many British gamers constantly harping on about the ZX Spectrum, CPC 464 and Commodore 64, it's easy to forget that there were plenty of other classic machines that were worth visiting, as this two-page 800XL spread proves. How many did you play?


MPH
HORIZ
ALT

01


EASTERN FRONT 1941
COPYRIGHT 1982 ATARI
ALL RIGHTS RESERVED
SELECT: LEARNER START TO BEGIN

02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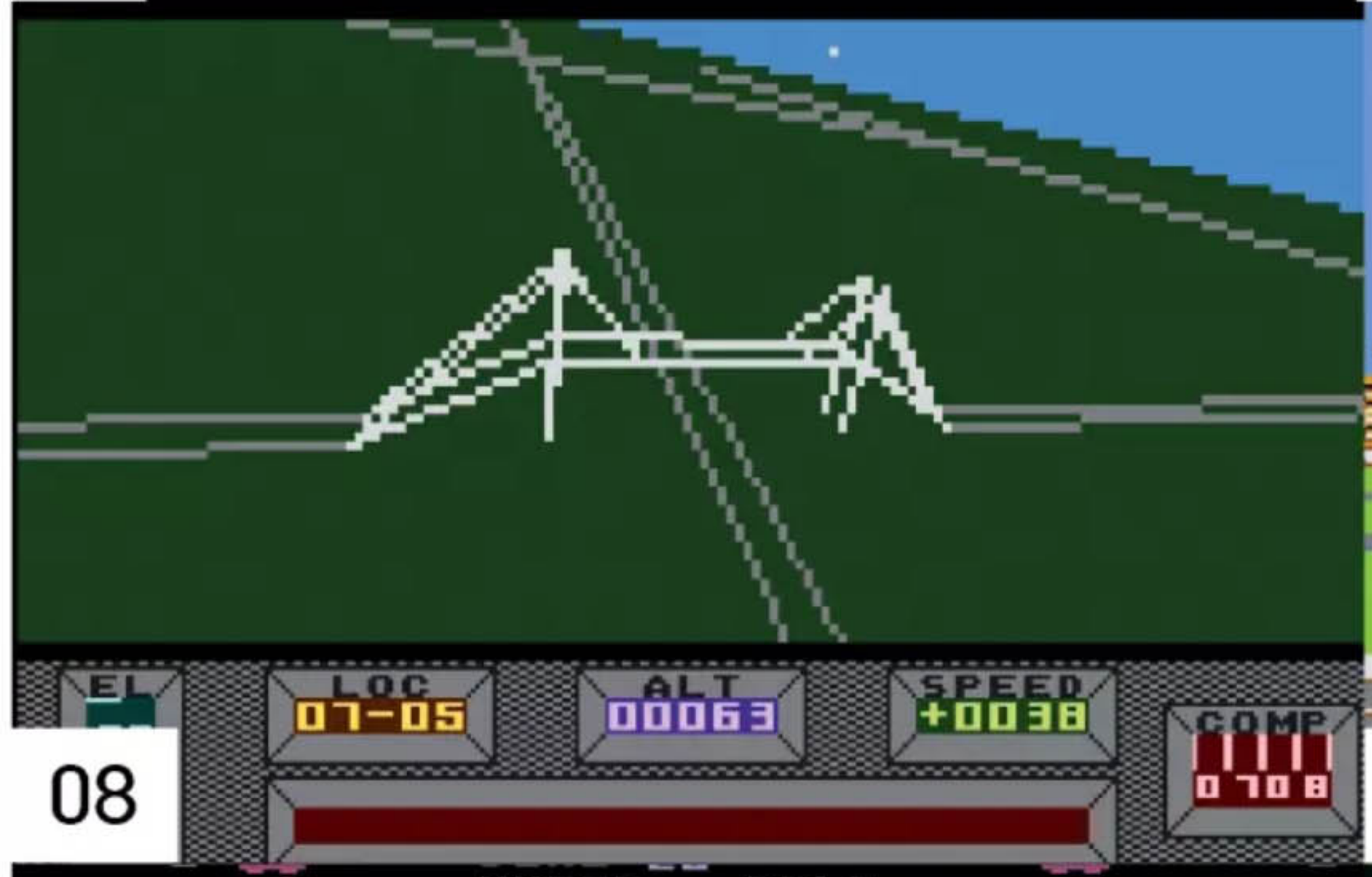
03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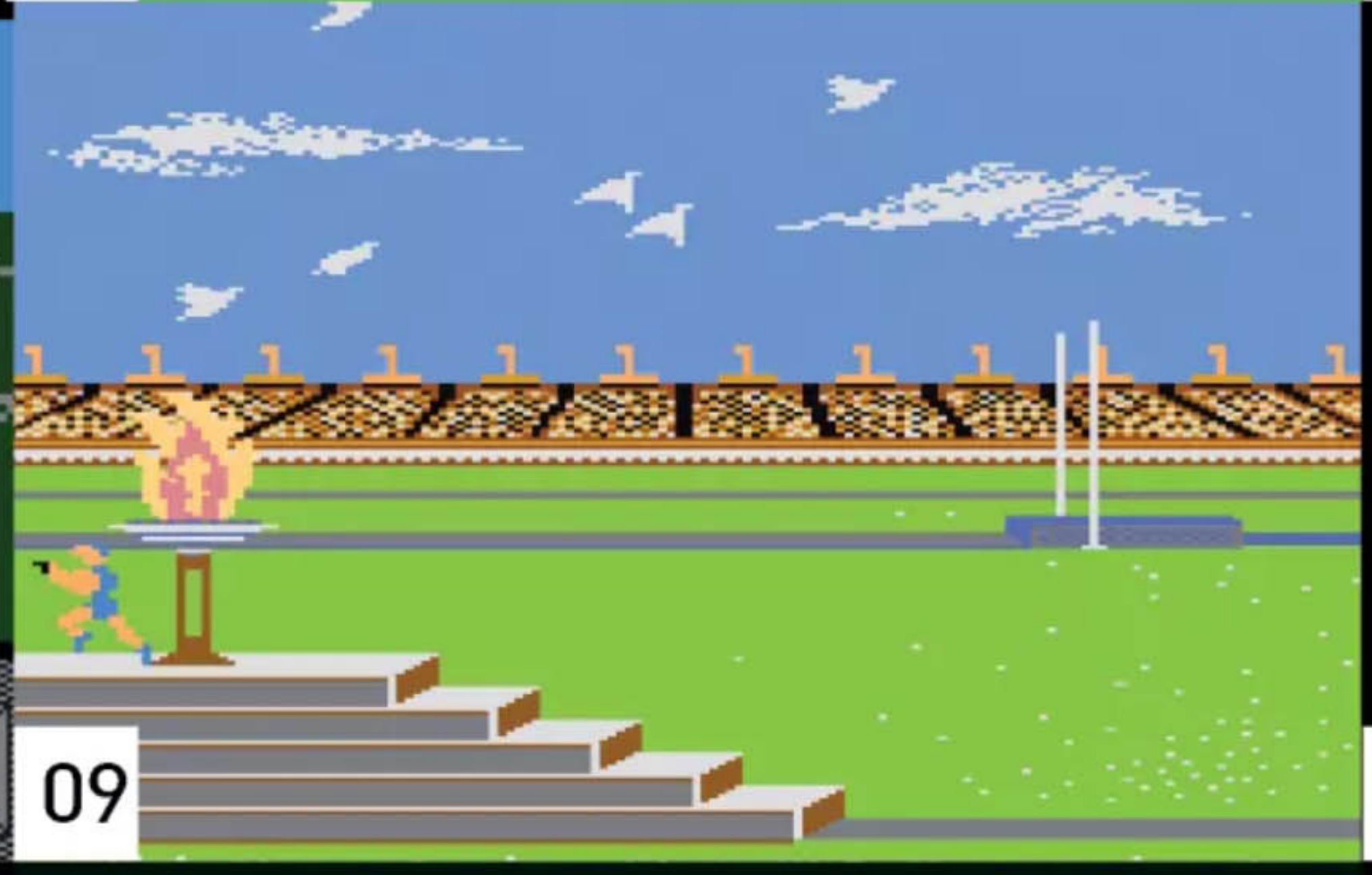

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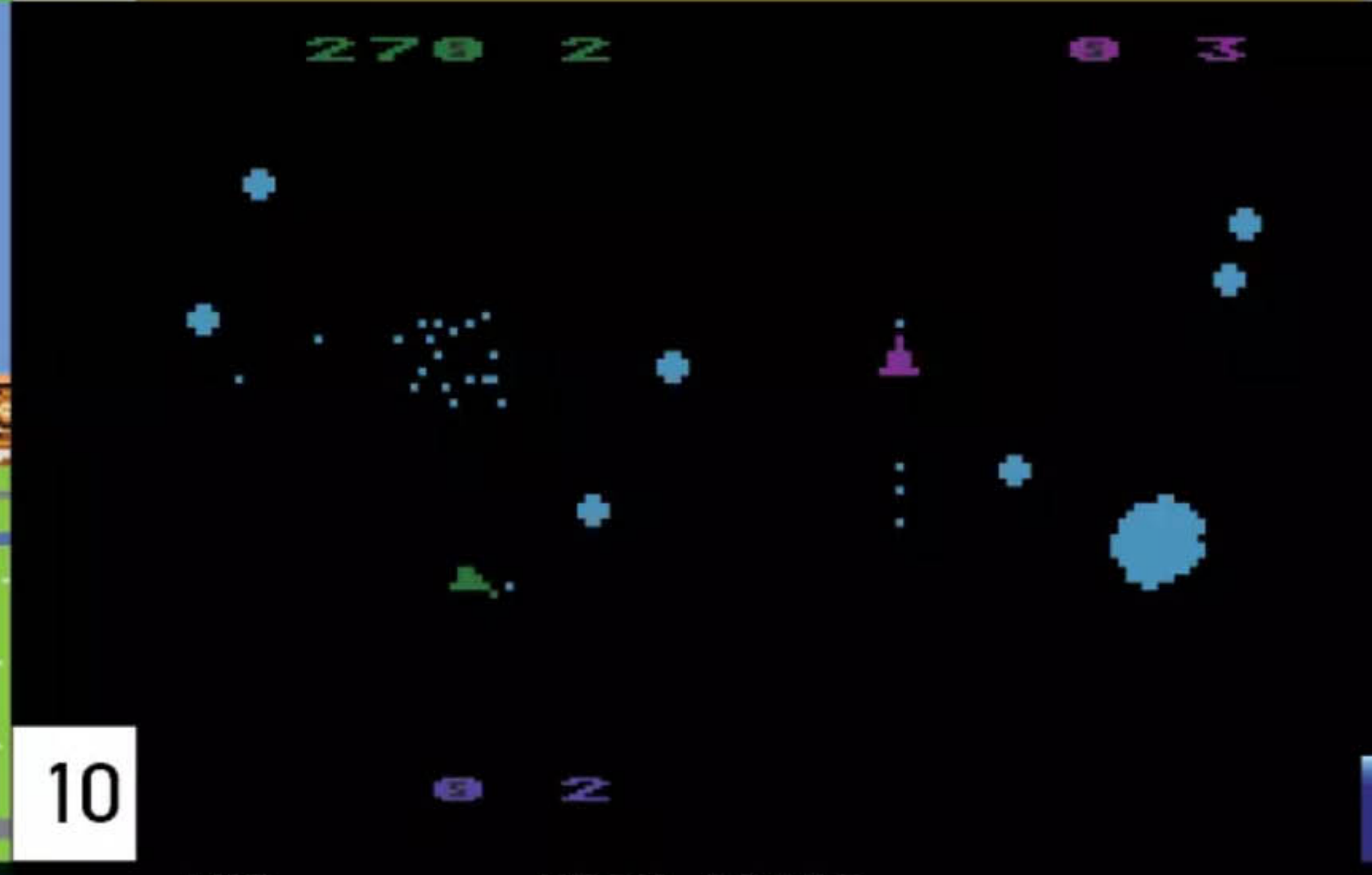

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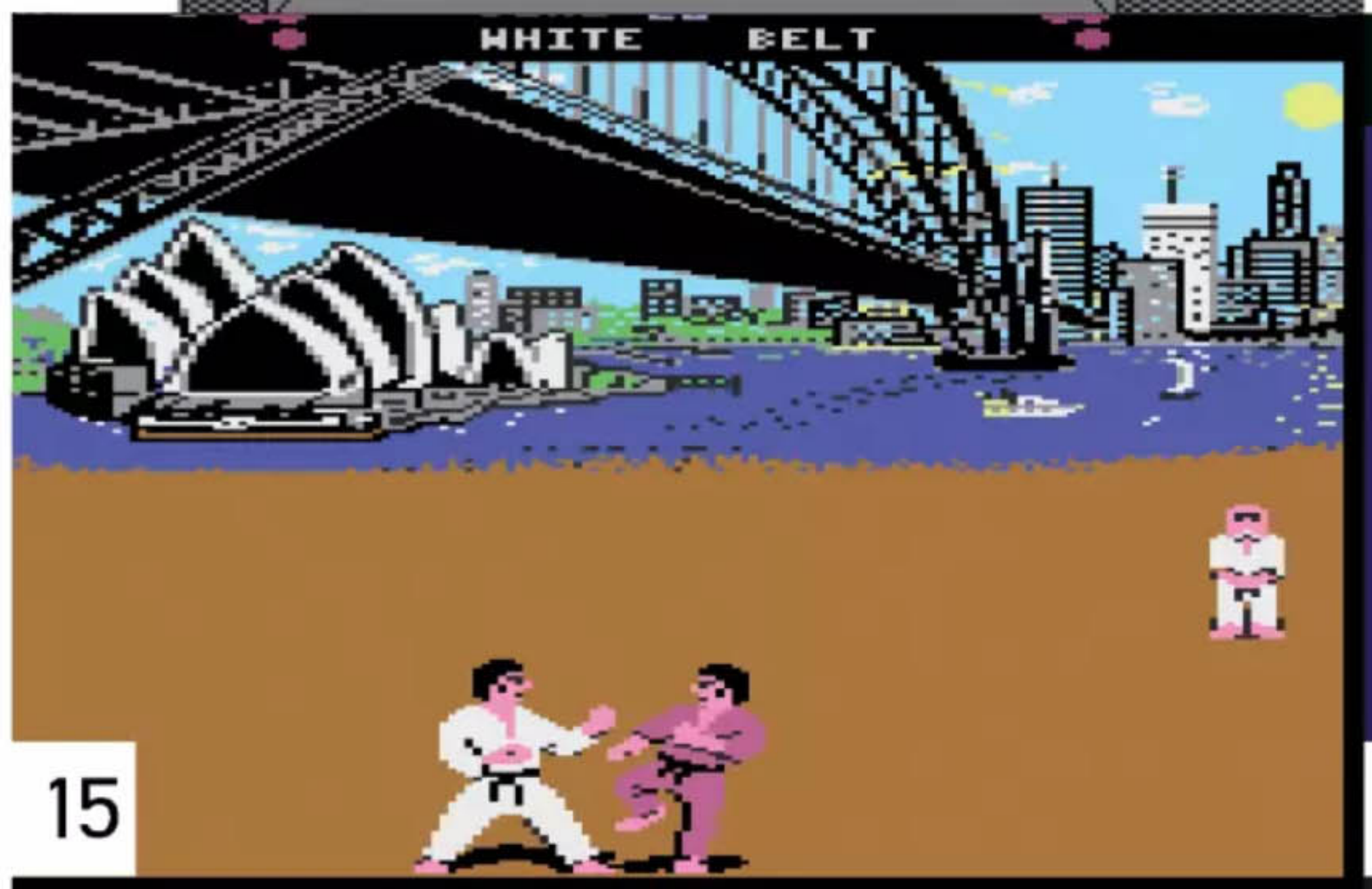

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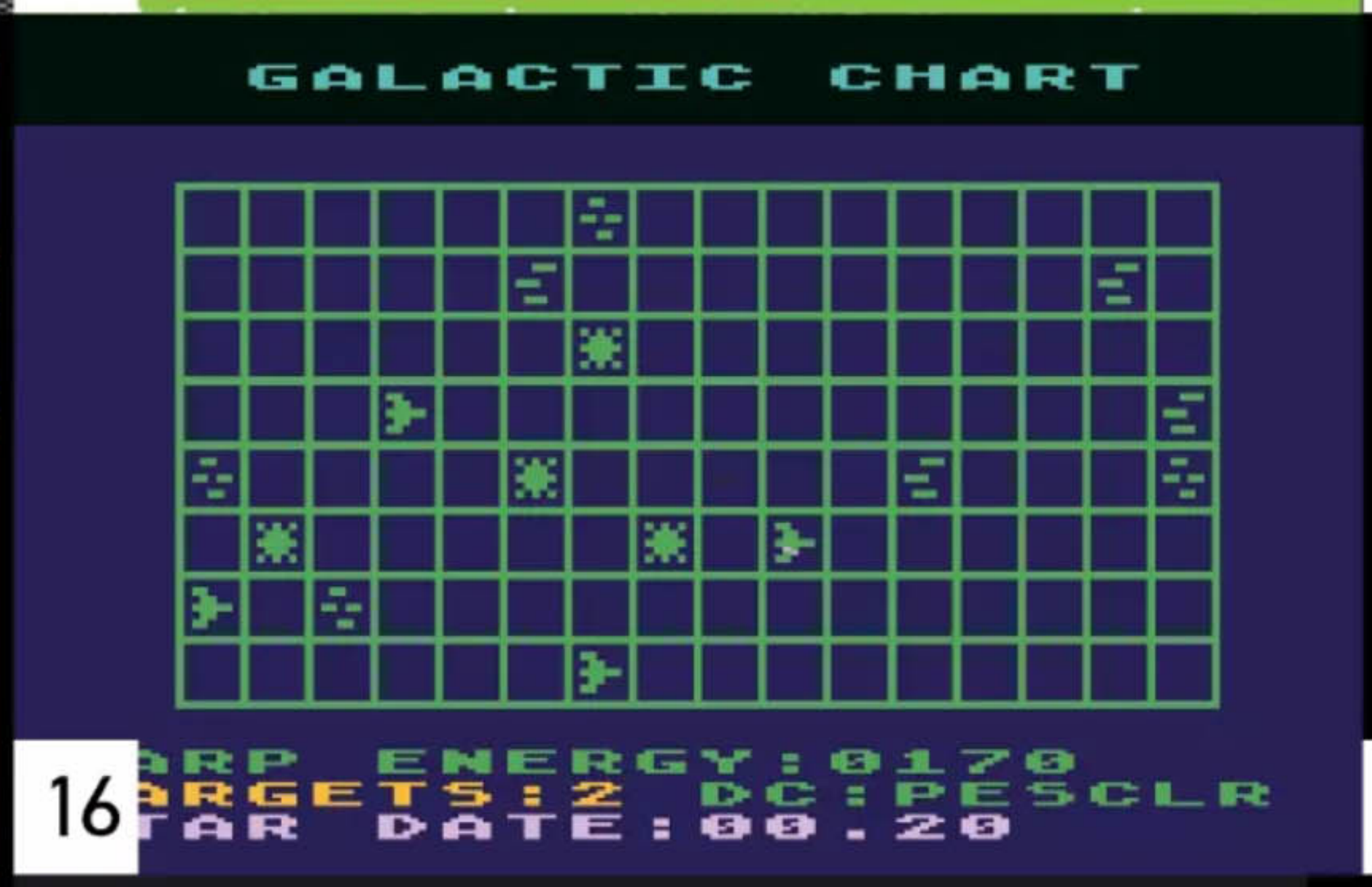
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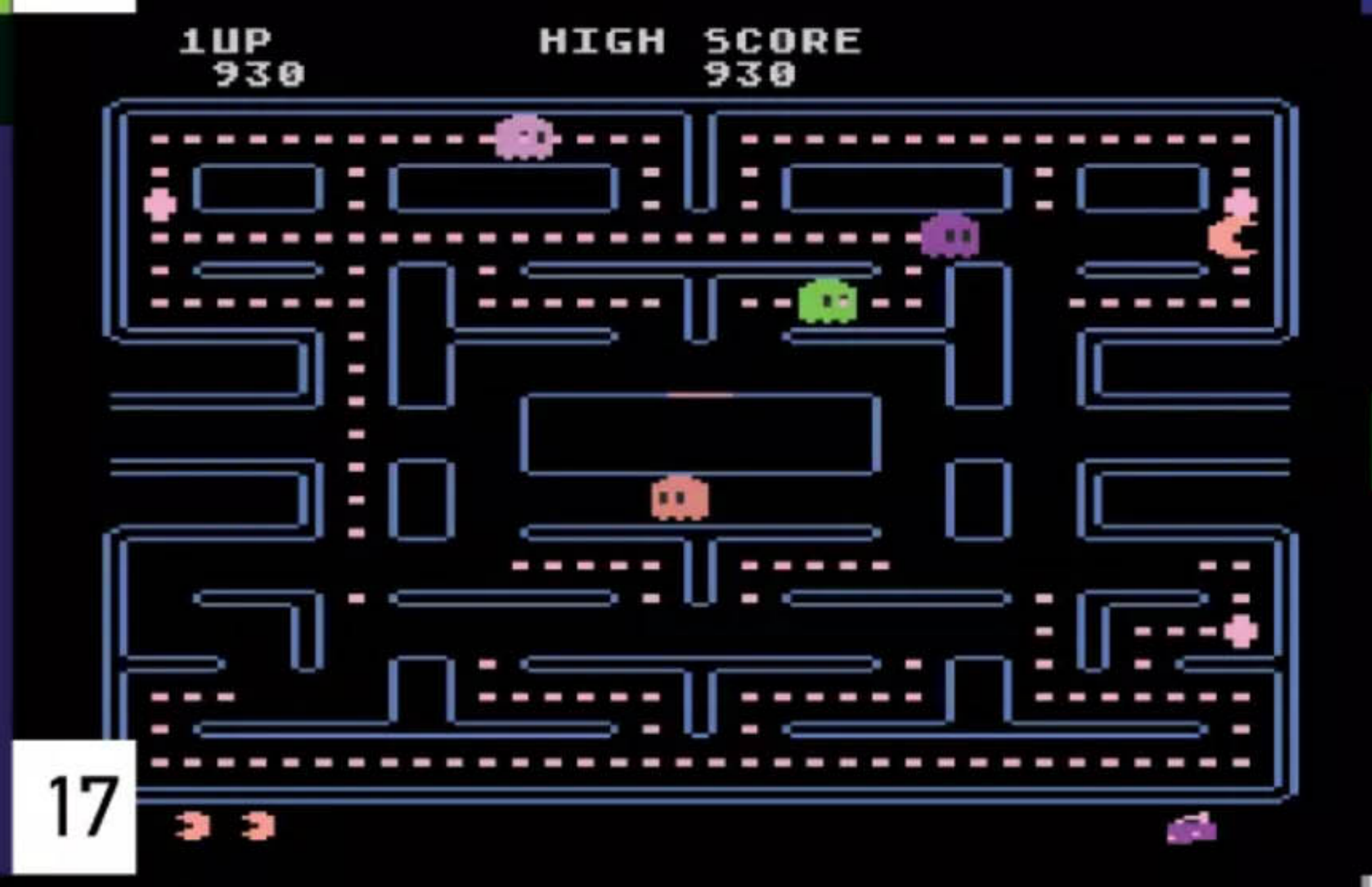
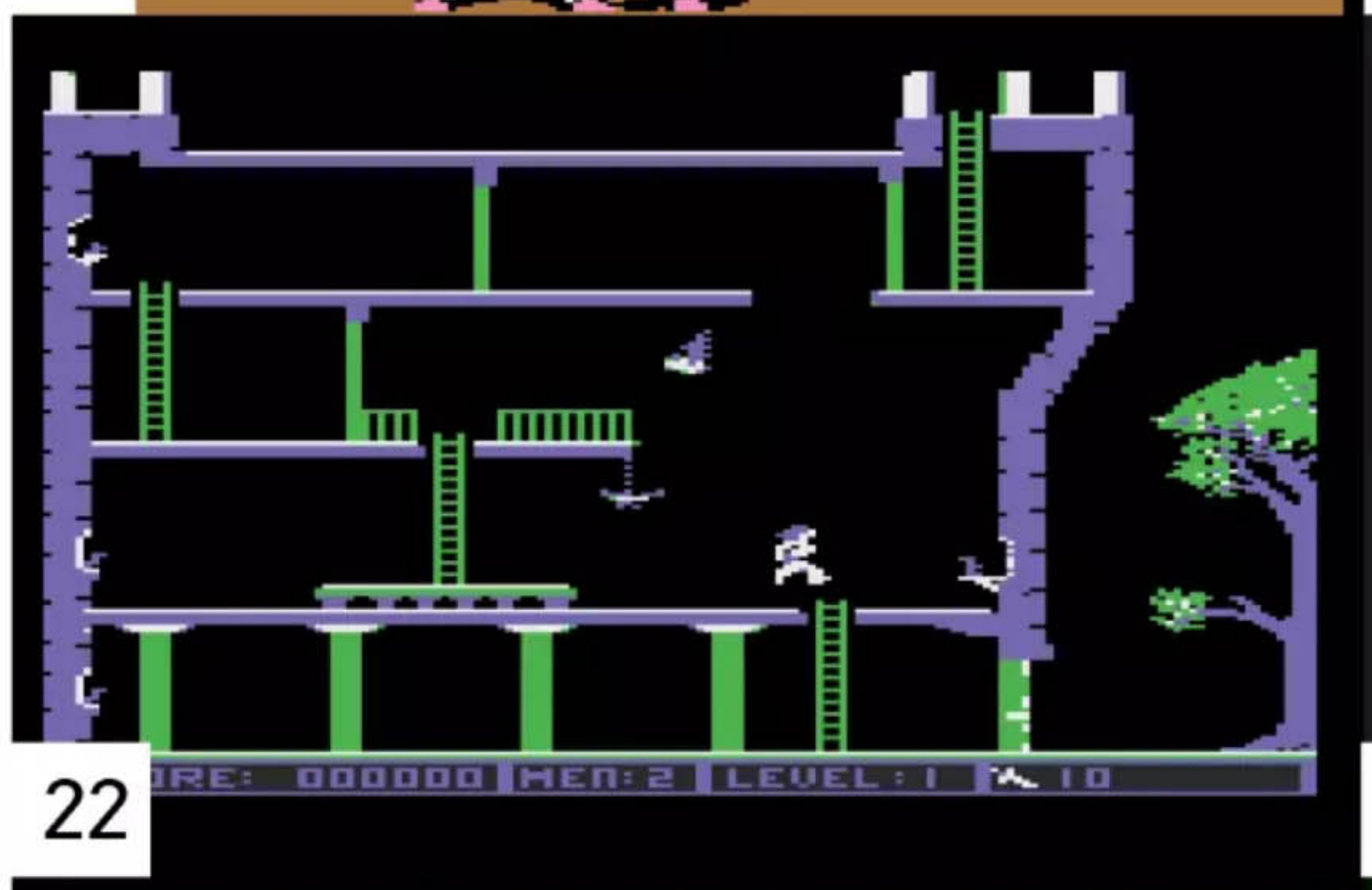

1UP
930
HIGH SCORE
930

17


RE: 000000 MEN:2 LEVEL:1

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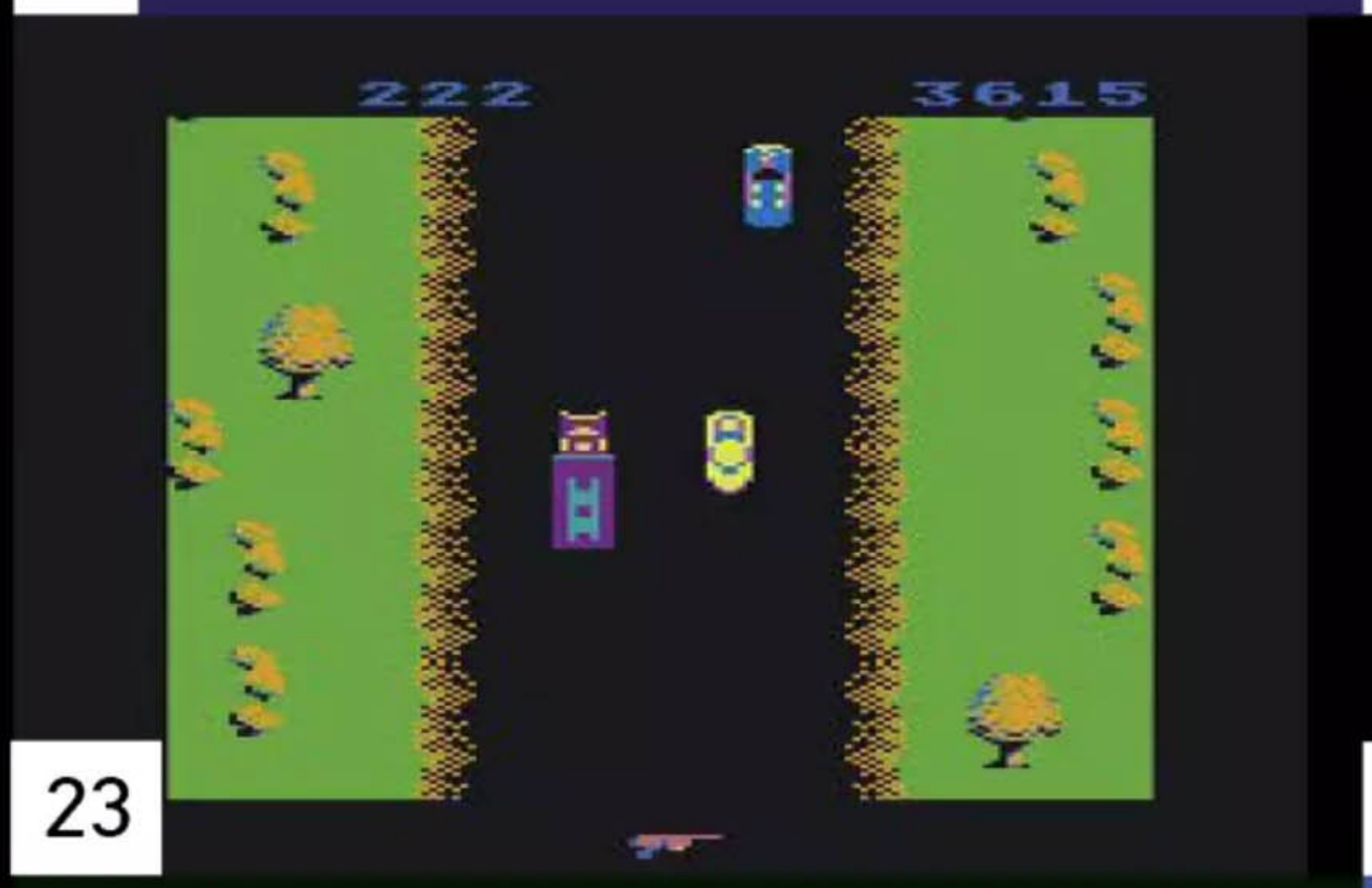

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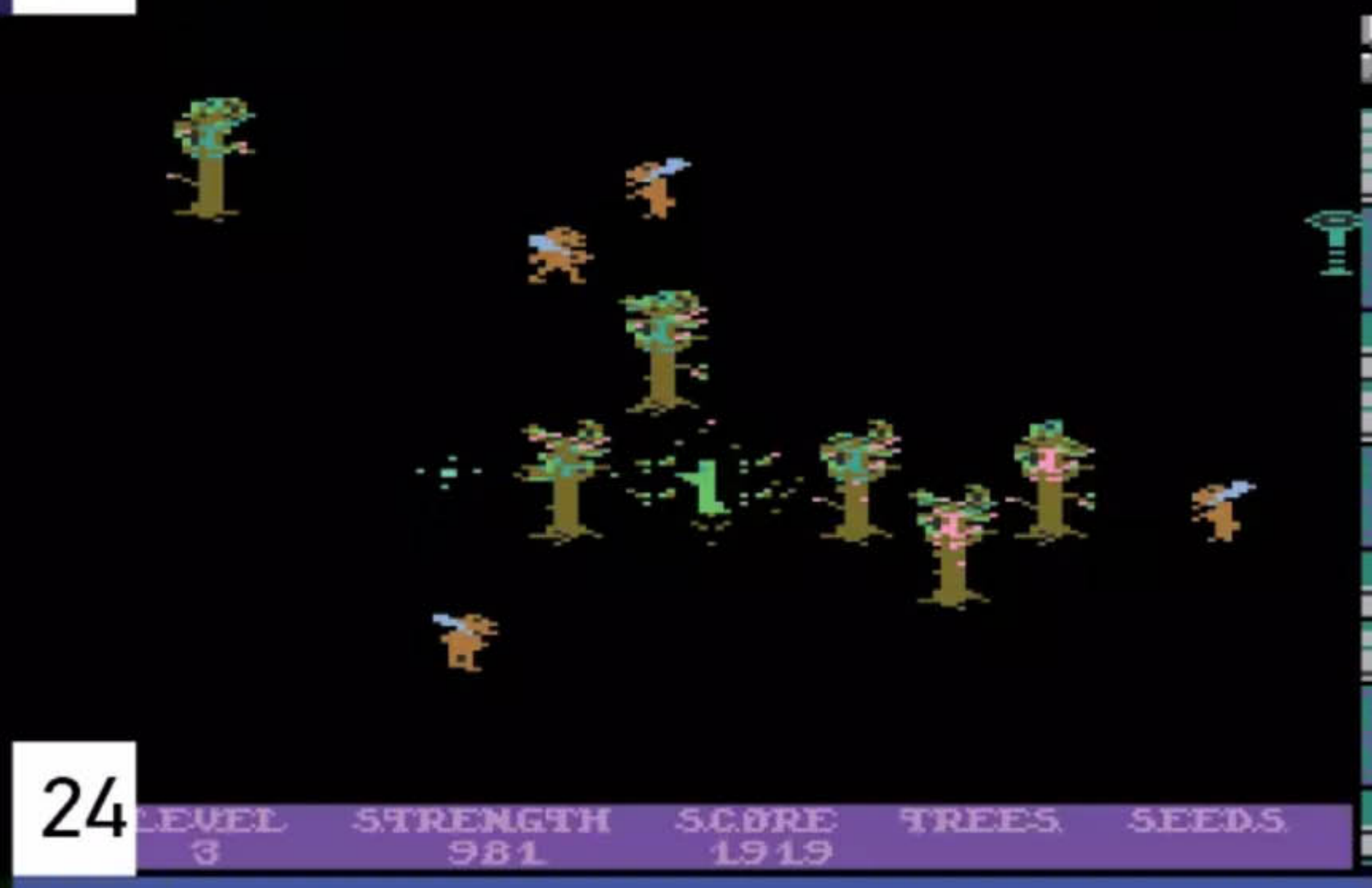
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STRENGTH 981
SCORE 1919
TREES
SEEDS

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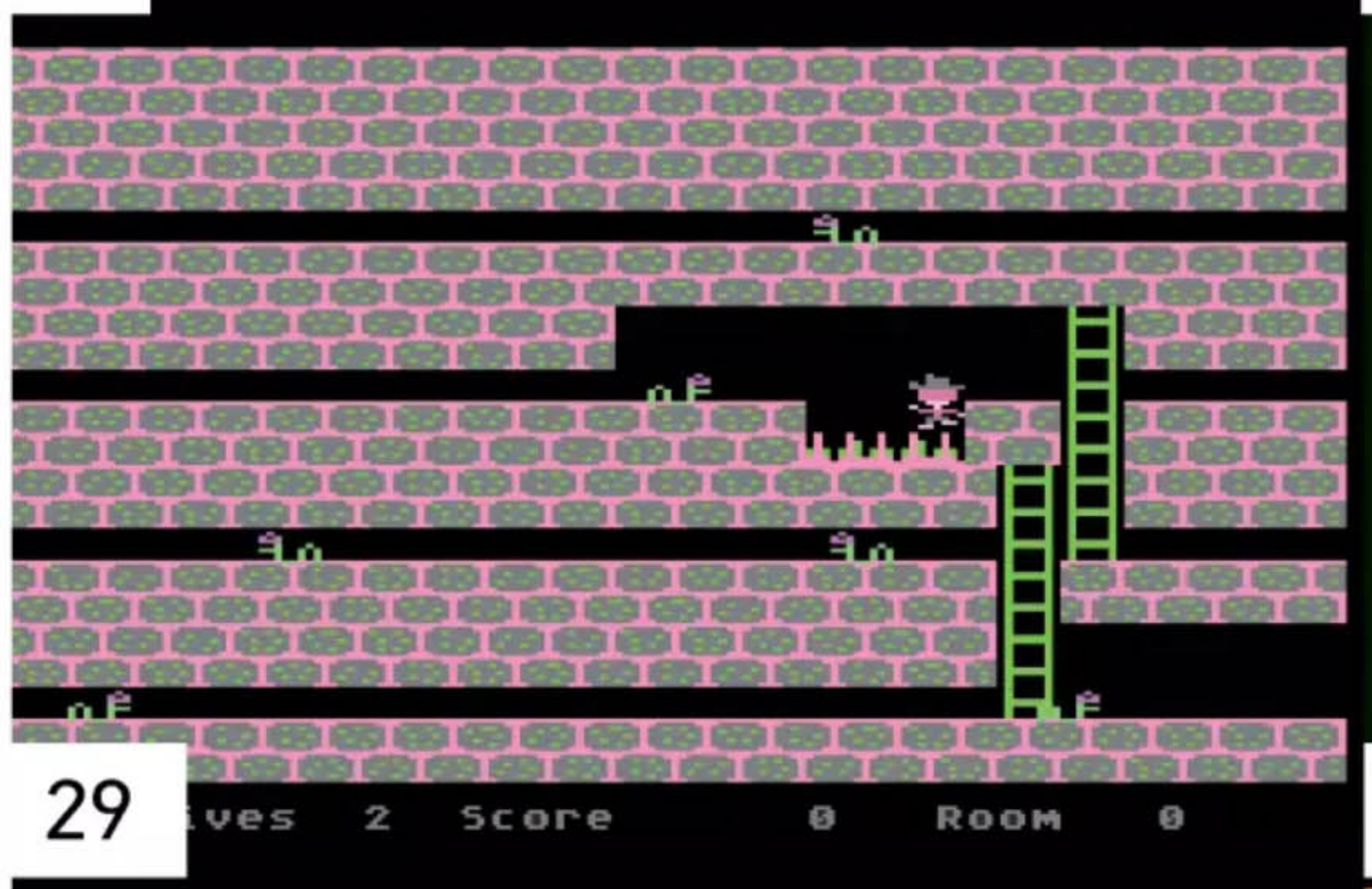
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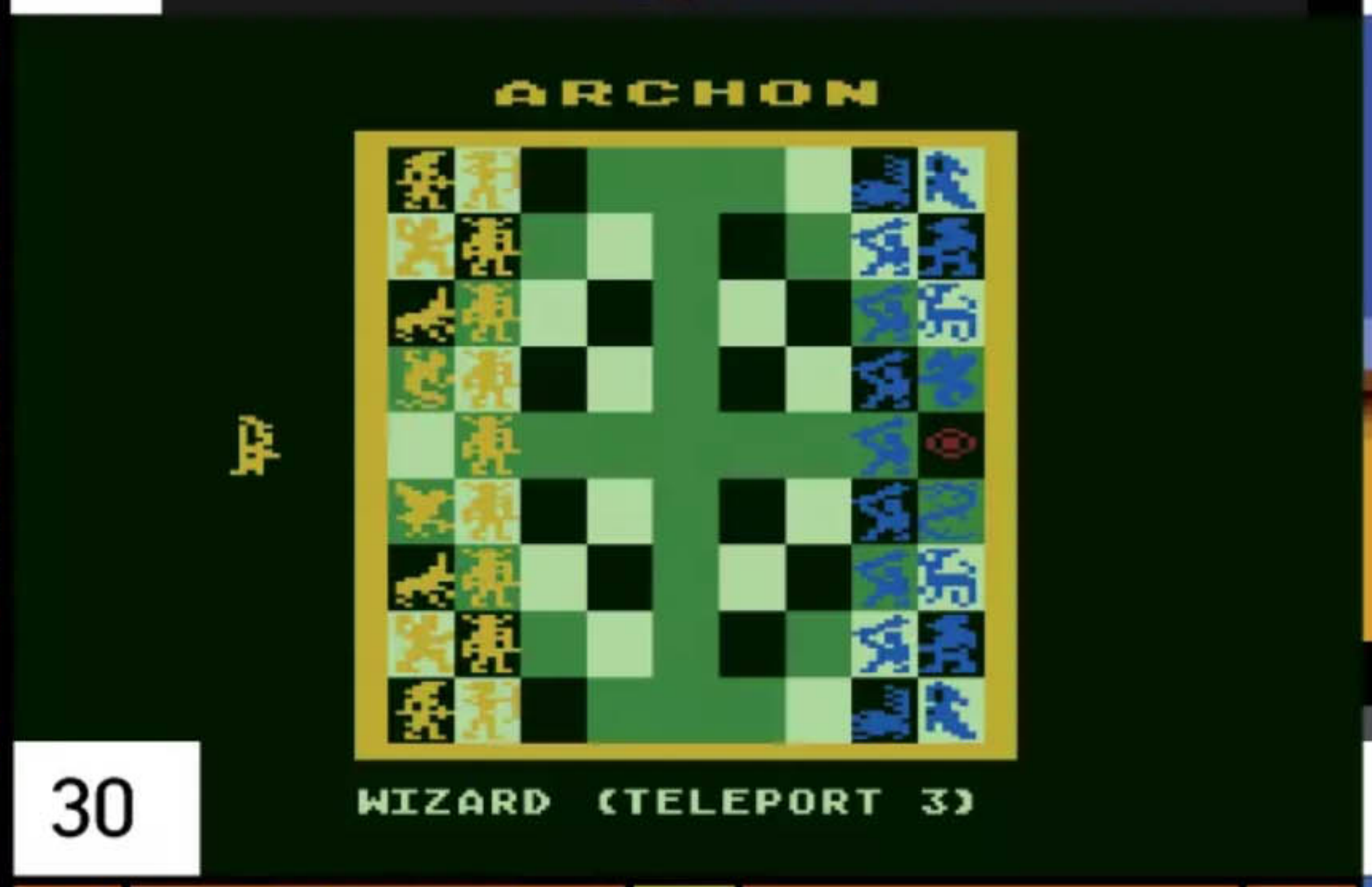
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WIZARD (TELEPORT 3)

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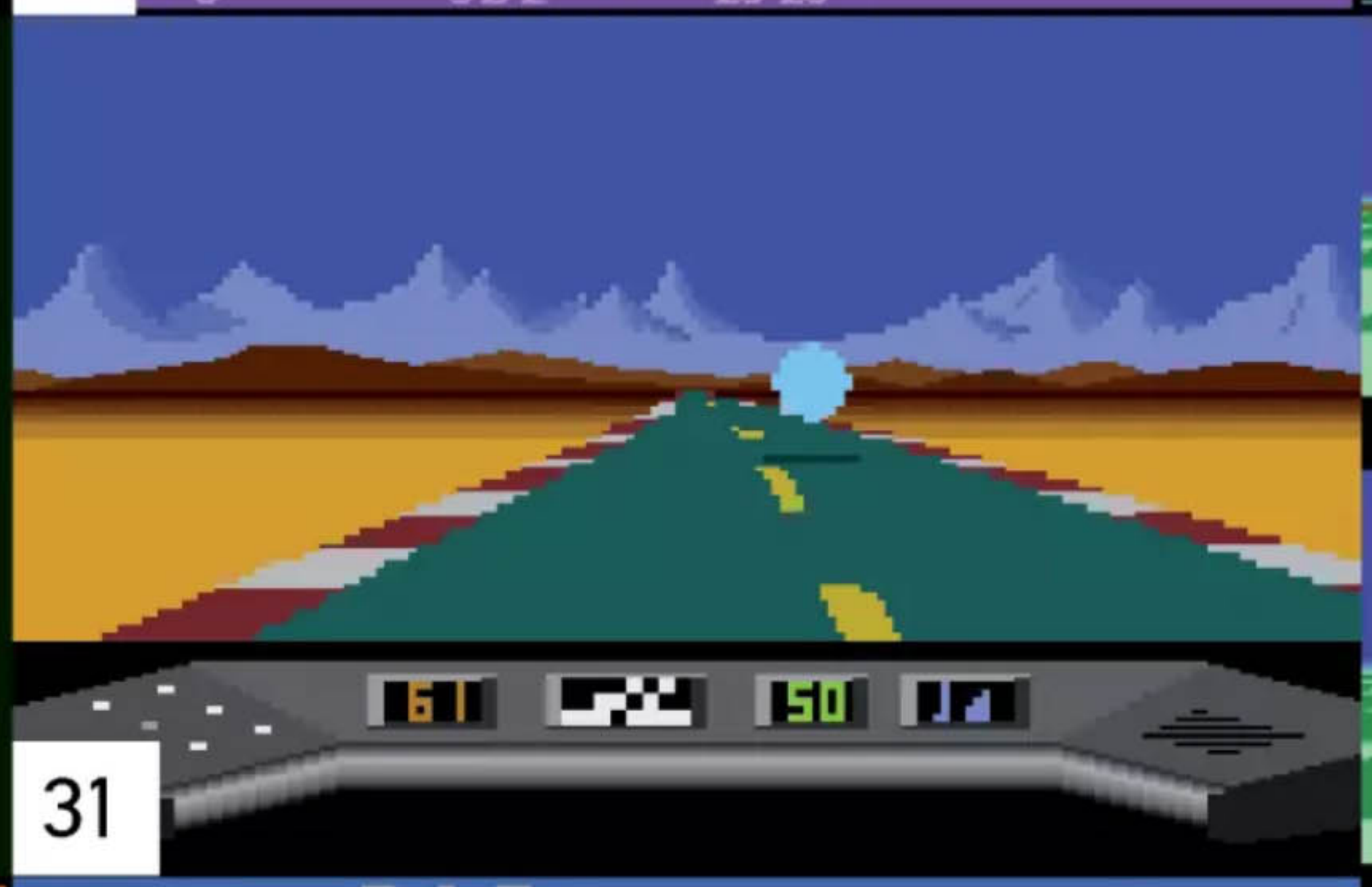

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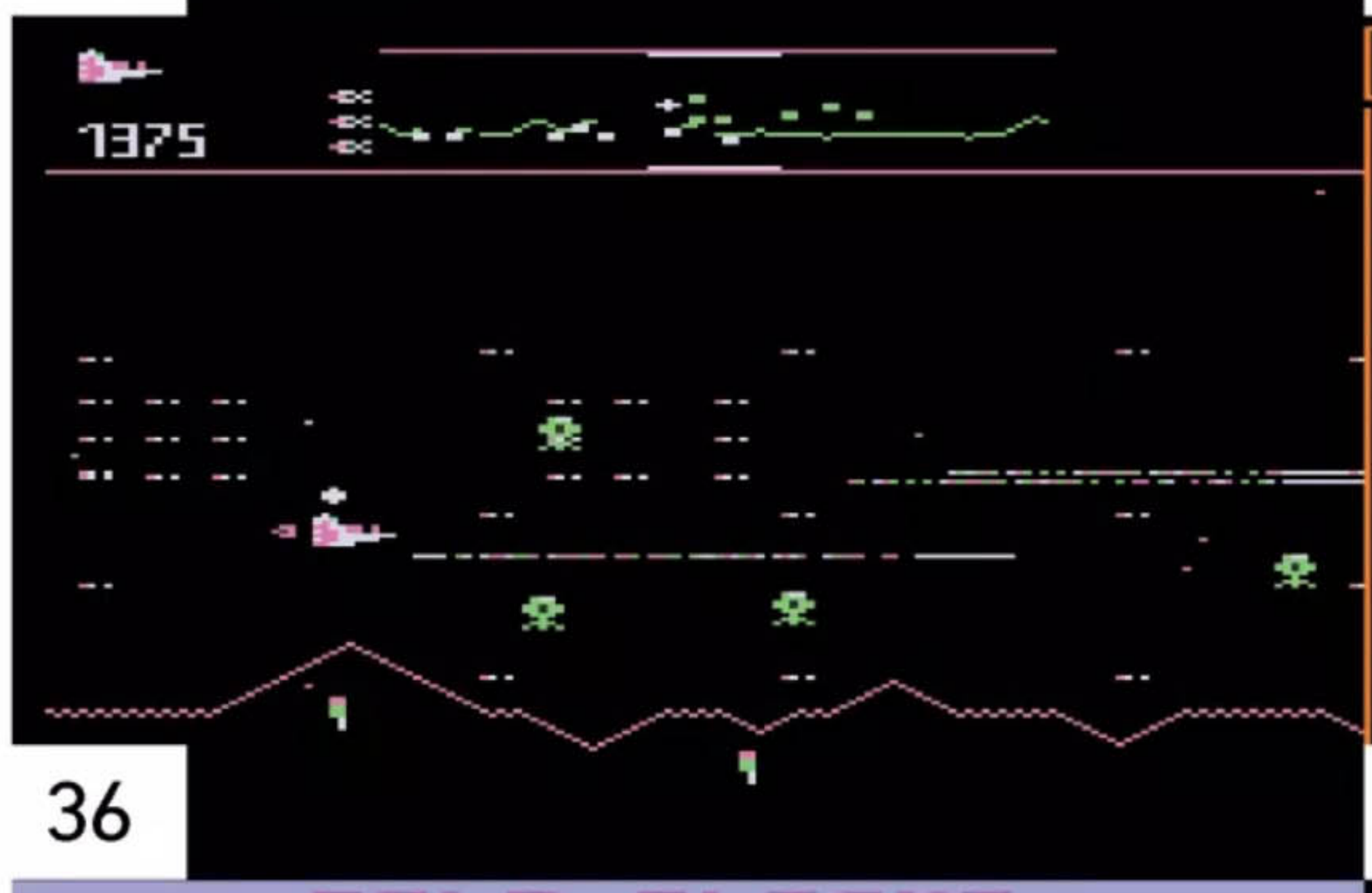

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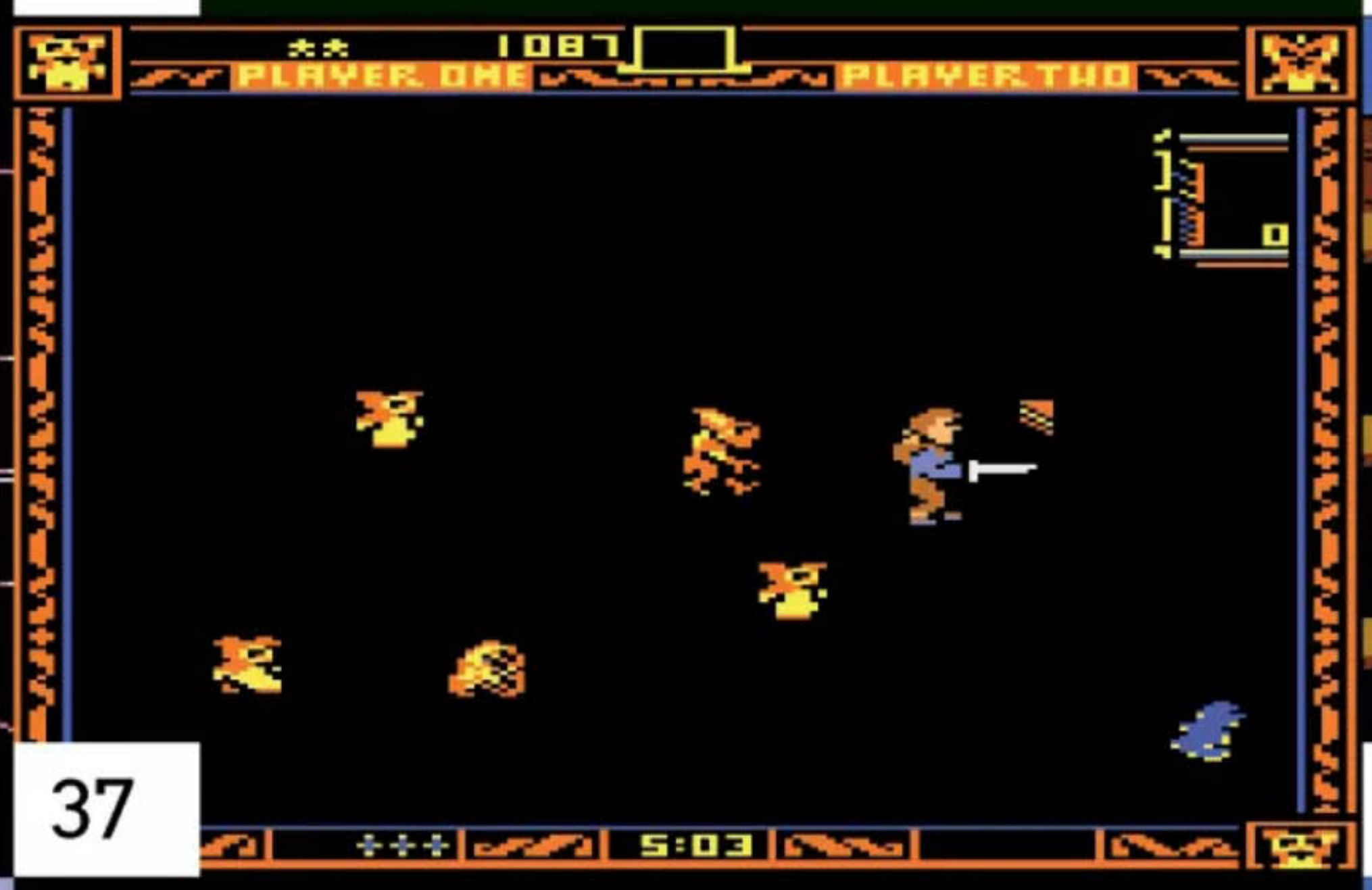
1087
PLAYER ONE
PLAYER TWO
5:03

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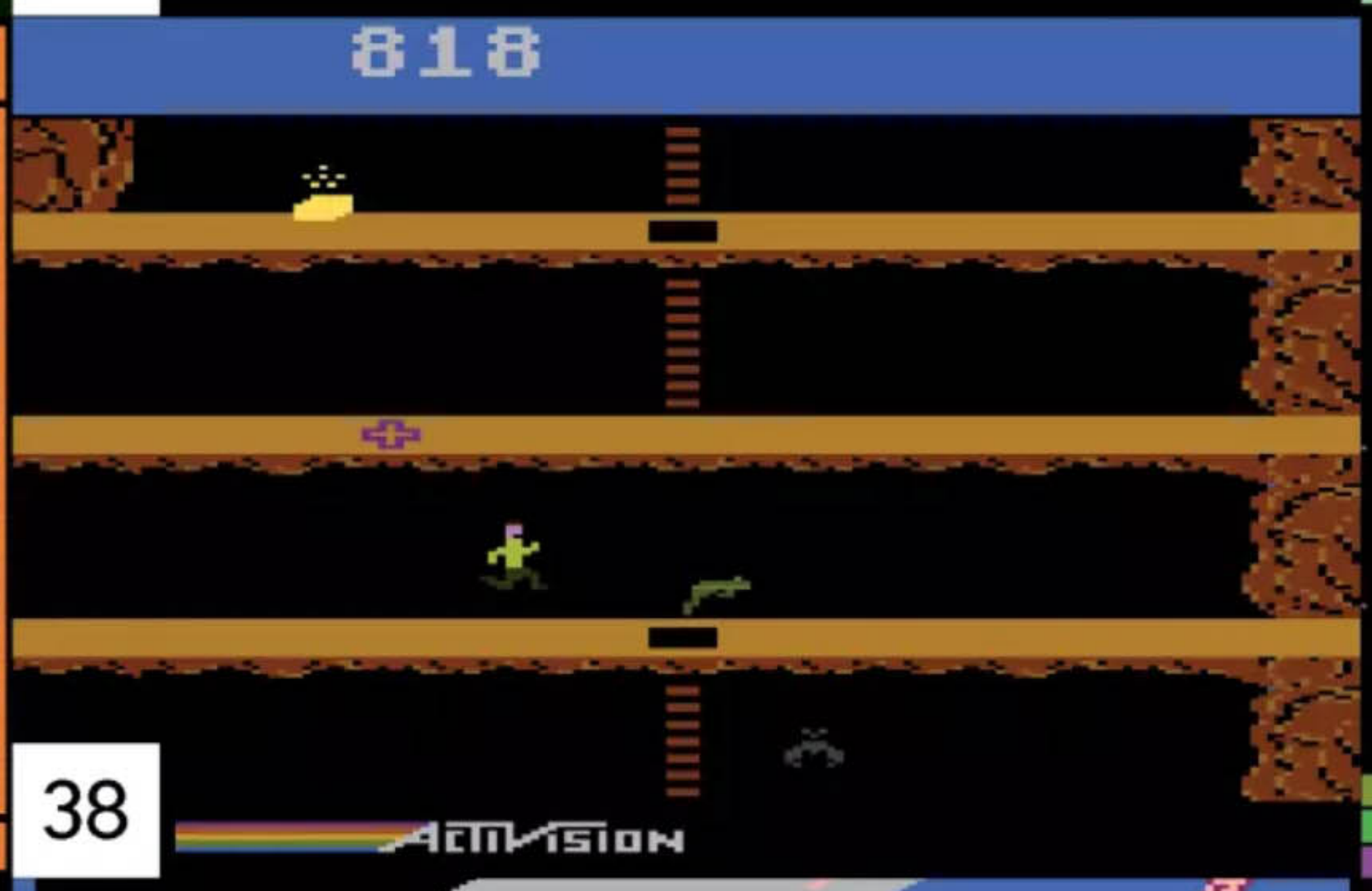
818
ACTIVISION

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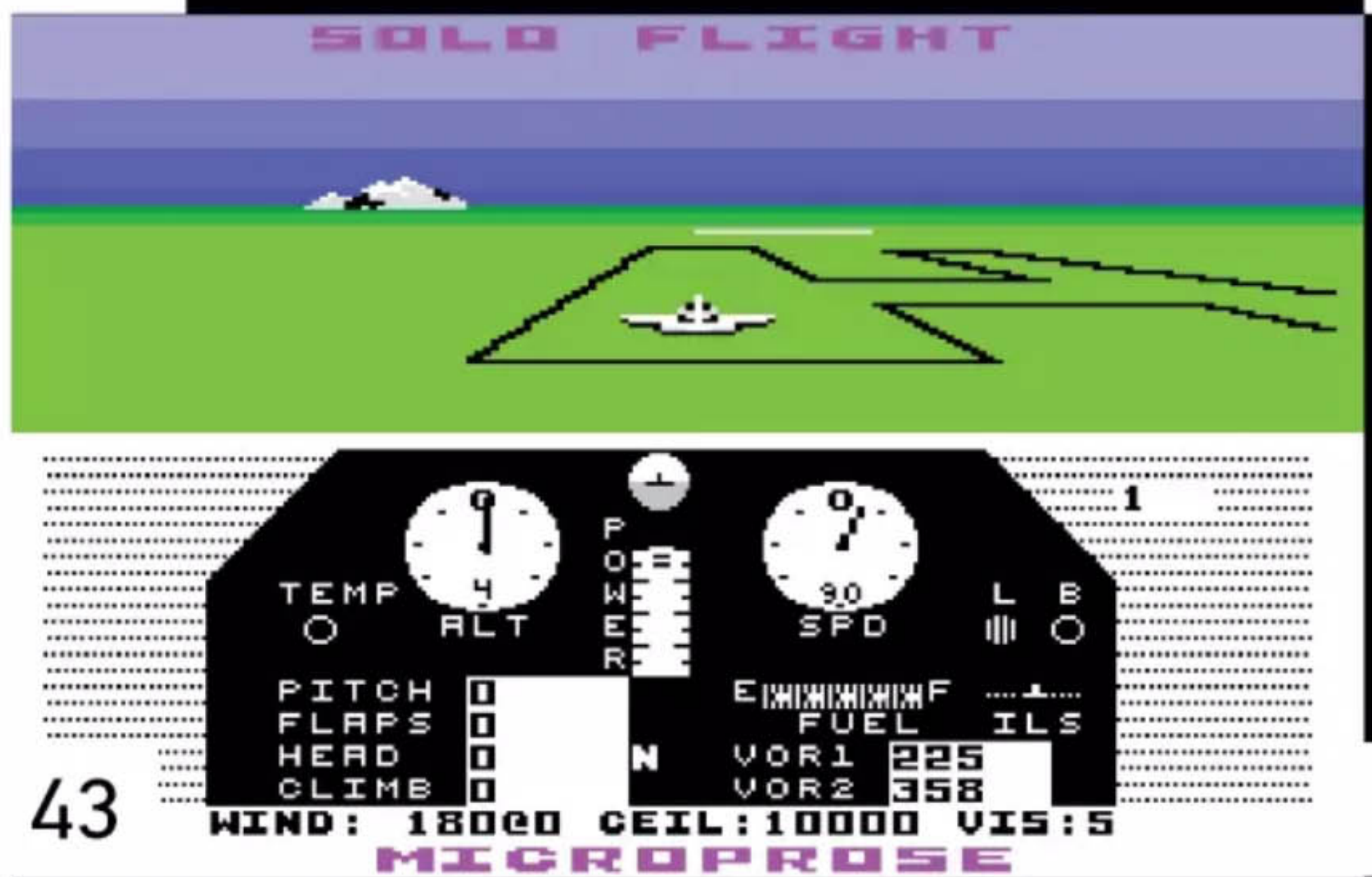
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TEMP
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FUEL
WIND: 180@0 CEIL:10000 VIS:5
MICROPROSE

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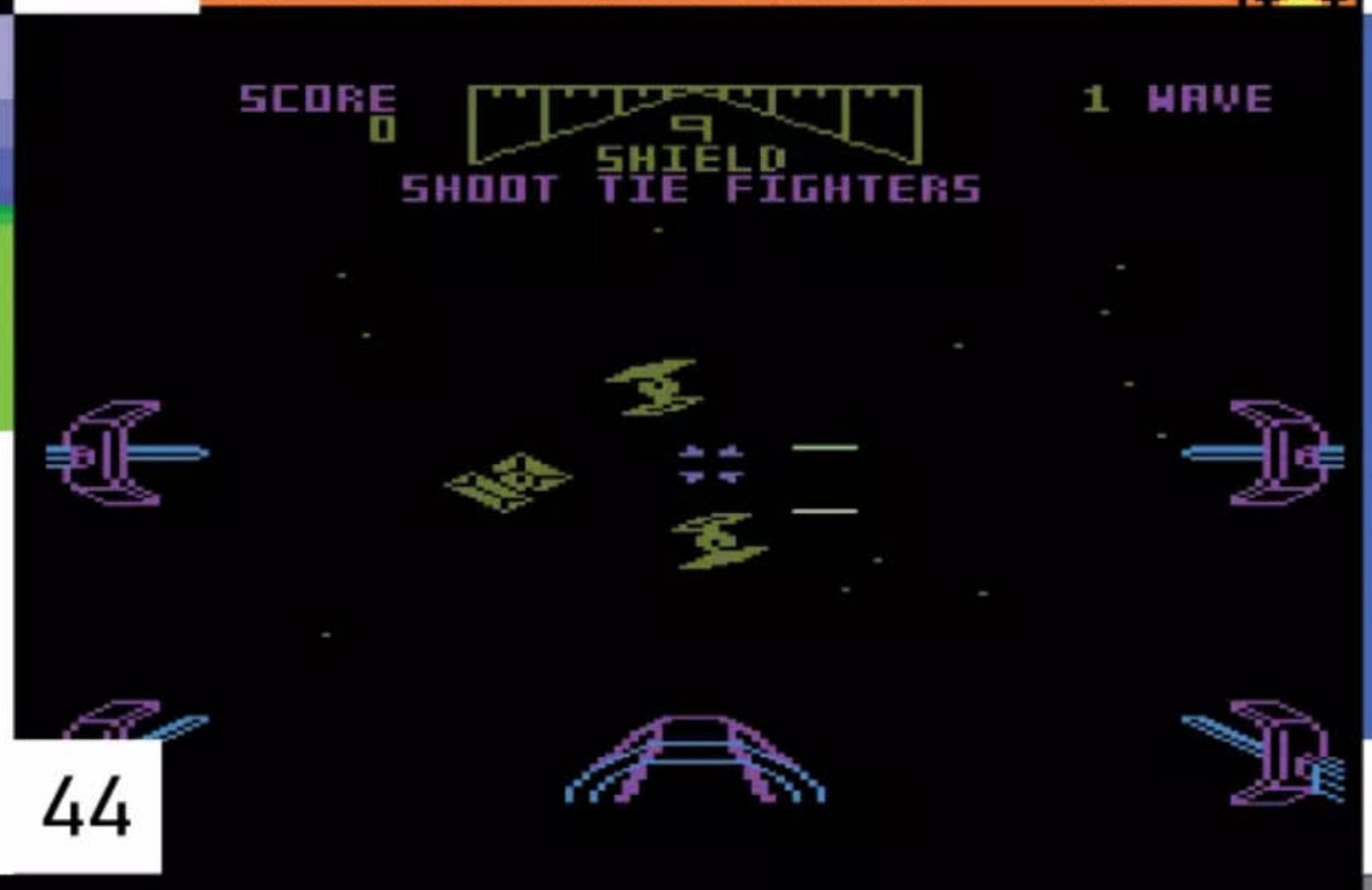
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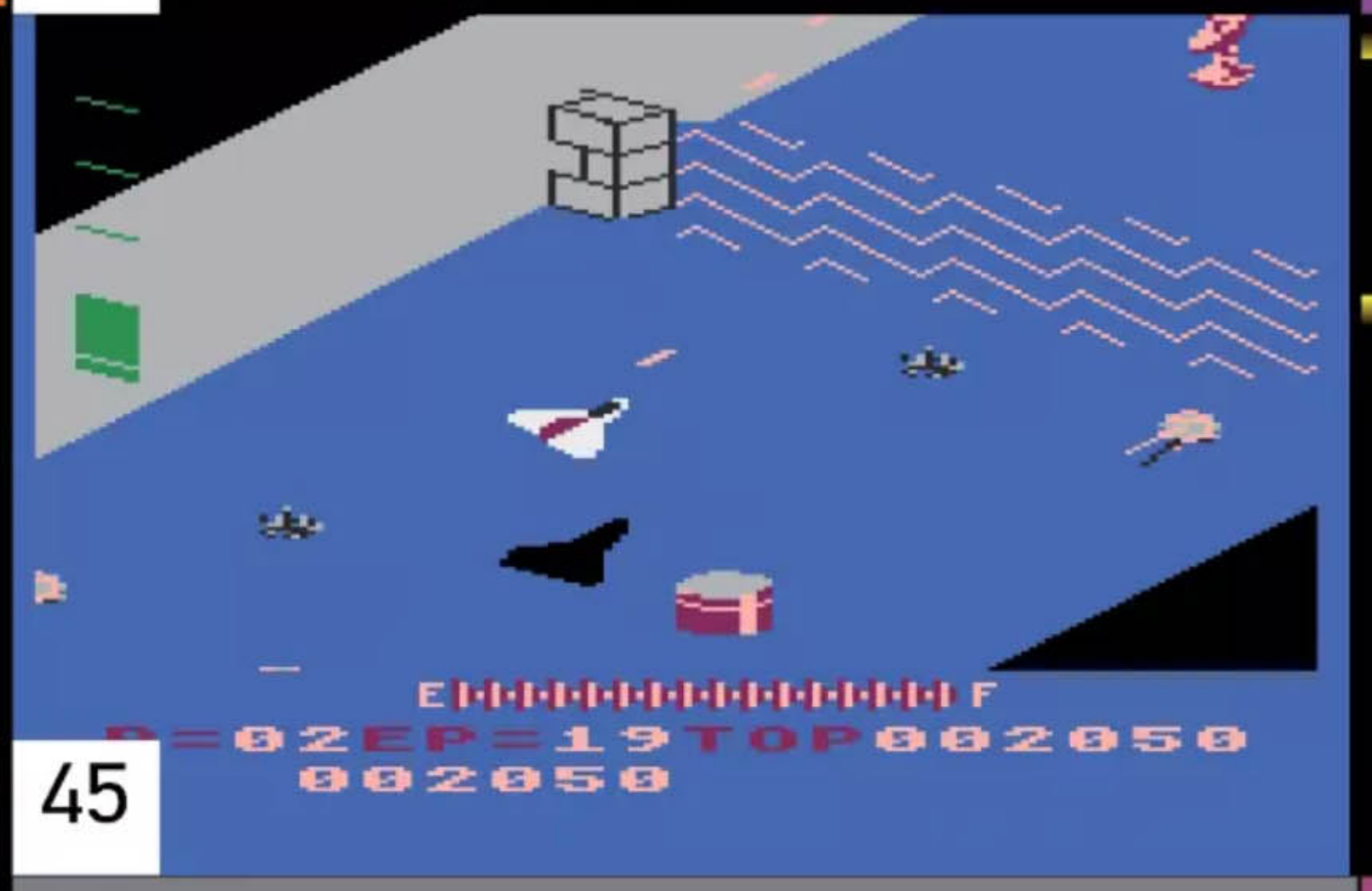
1 WAVE
SHOOT TIE FIGHTERS

44



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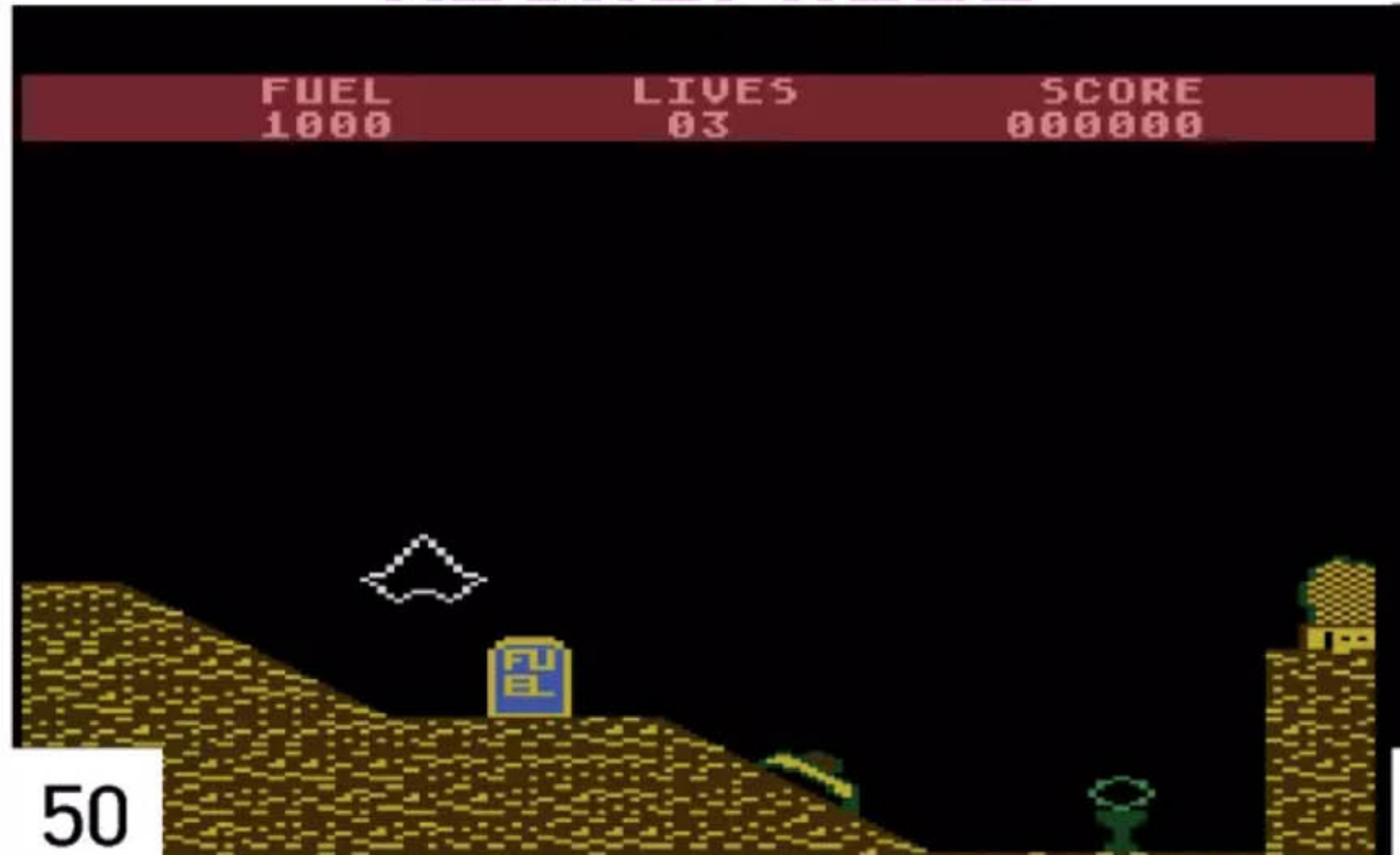
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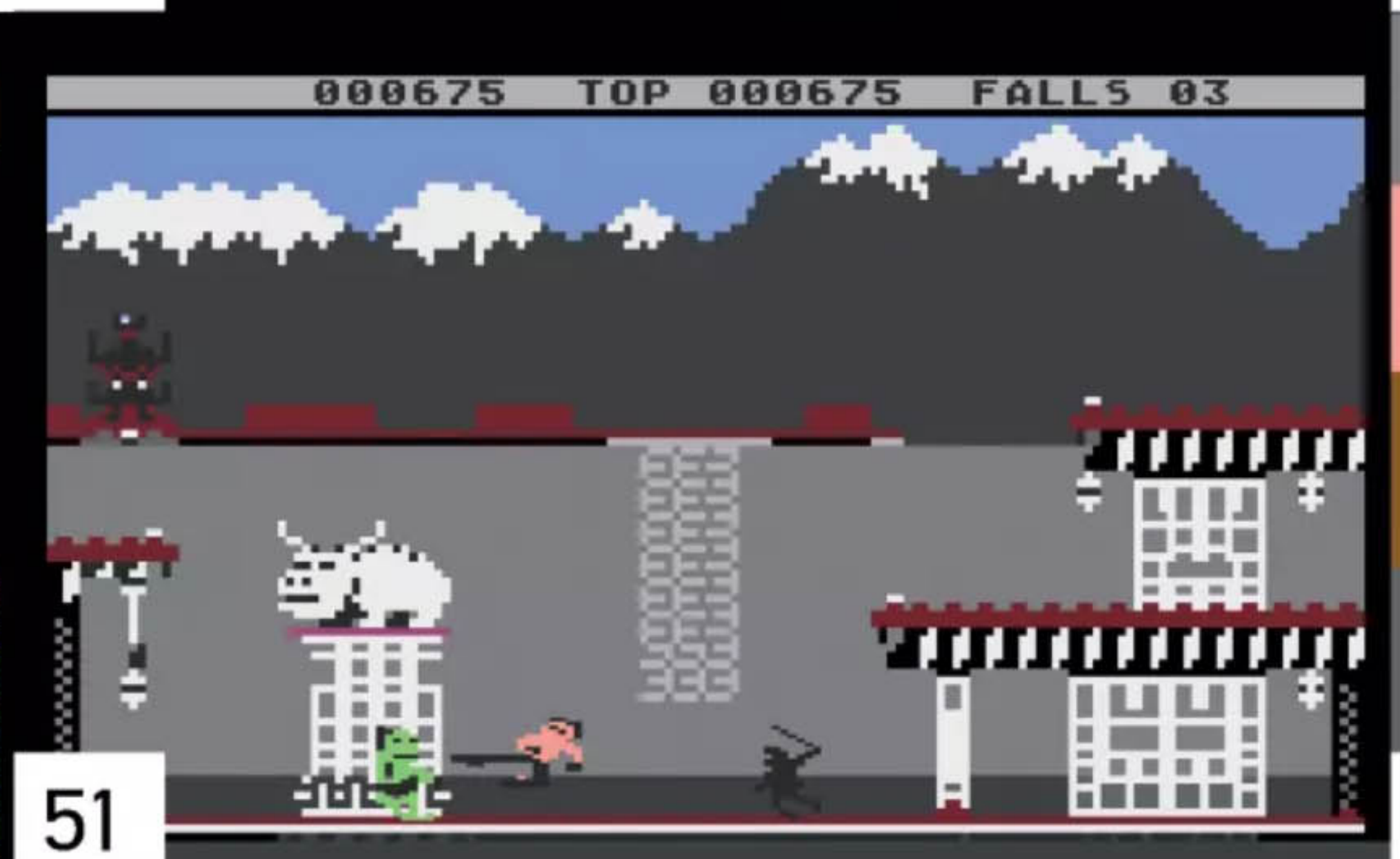
LIVES 03
SCORE 000000

50


000675 TOP 000675 FALLS 03

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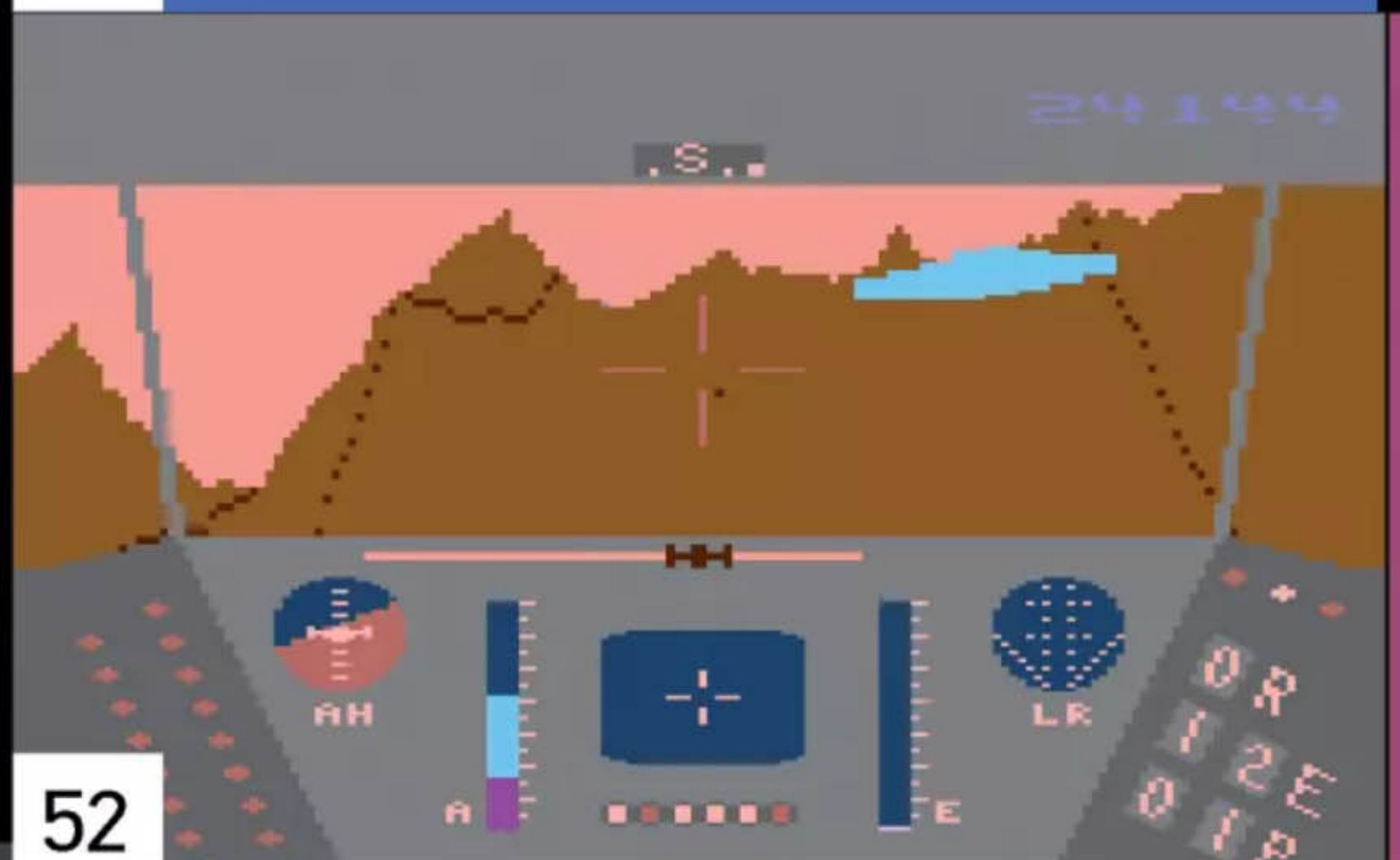
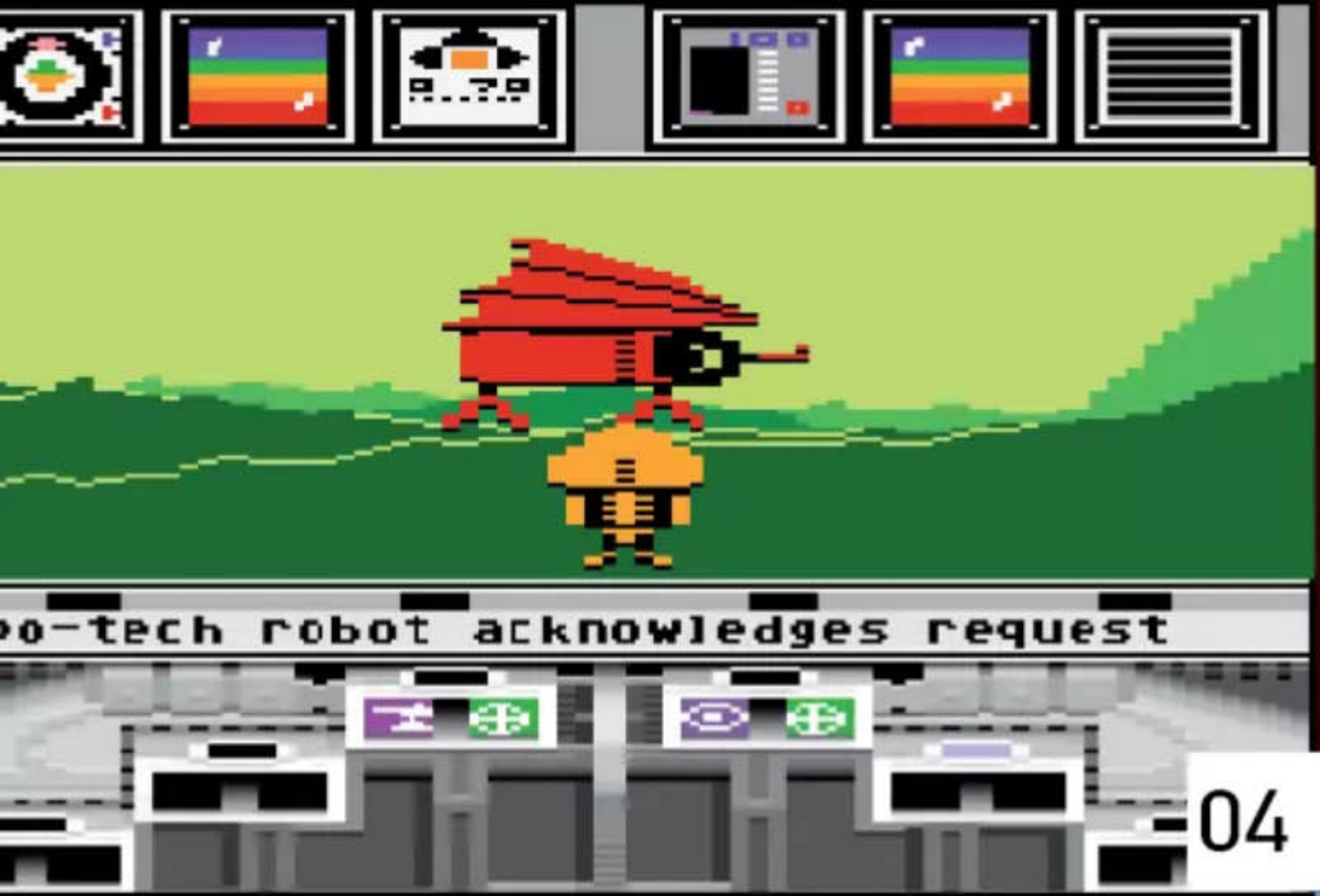
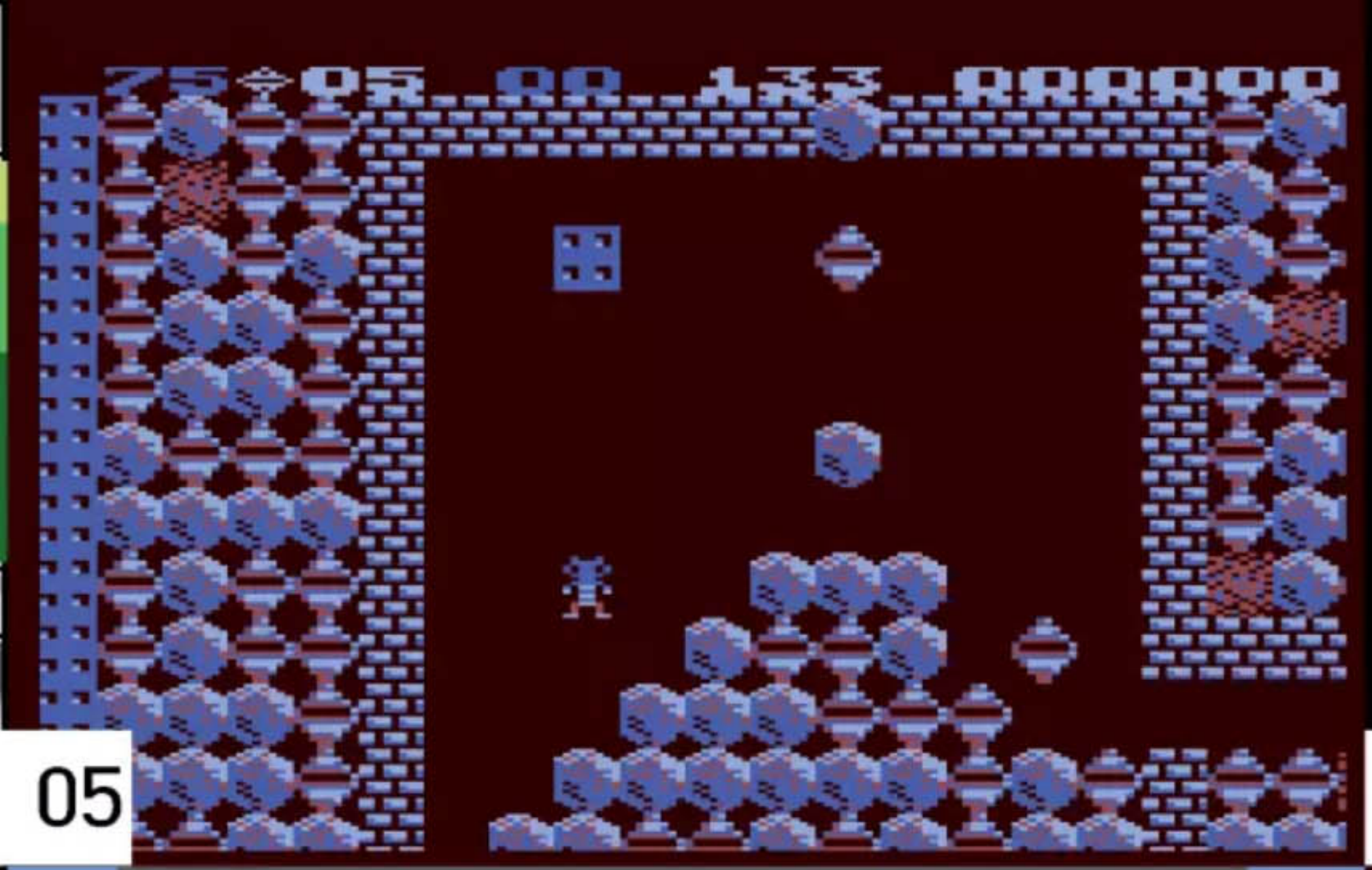


52

1 Ace of Aces
2 Eastern Front
3 Revenge II
4 Koronis Rift
5 Boulder dash
6 Dropzone
7 Pole Position
8 Mercenary
9 summer games
10 asteroids
11 Demon Attack
12 Ghostbusters
13 Attack of the Mutant Camels
14 Pastfinder
15 International Karate
16 Star Raiders
17 Pac-Man
18 Archon II
19 Bounty Bob Strikes Back
20 M.U.L.E.
21 Raid Over Moscow
22 Conan
23 SpyHunter
24 Necromancer
25 Ghost Chaser
26 BC's Quest for Tires
27 The Eidolon
28 Mr Do!
29 Shamus II
30 Archon
31 Elektra Glide
32 Ballblazer
33 Shamus
34 The Seven Cities of Gold
35 Karateka
36 Defender
37 Gremlins
38 Pitfall II: Lost Caverns
39 Astro Chase
40 Miner 2049er
41 Robotron: 2084
42 Gyruss
43 Solo Flight
44 Star Wars
45 Zaxxon
46 Fort Apocalypse
47 Alternate Reality: The City
48 Encounter!
49 Spindizzy
50 Thrust
51 Bruce Lee
52 Rescue on Fractalus!
53 Spy Vs Spy
54 The Goonies
55 Montezuma's Revenge
56 Tapper


o-tech robot acknowledges request

04



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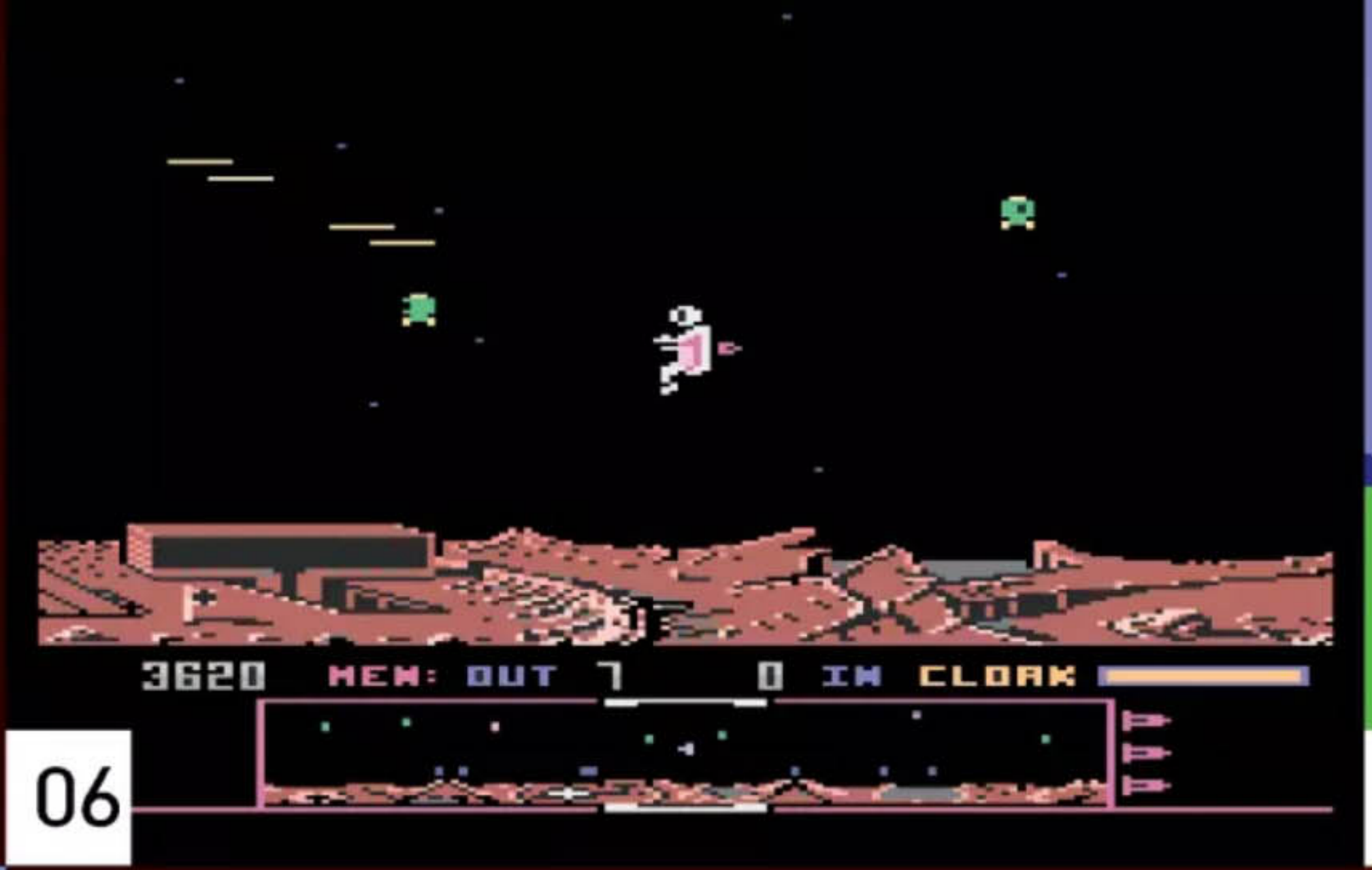
3620 MEN: OUT 1 0 IN CLOAK

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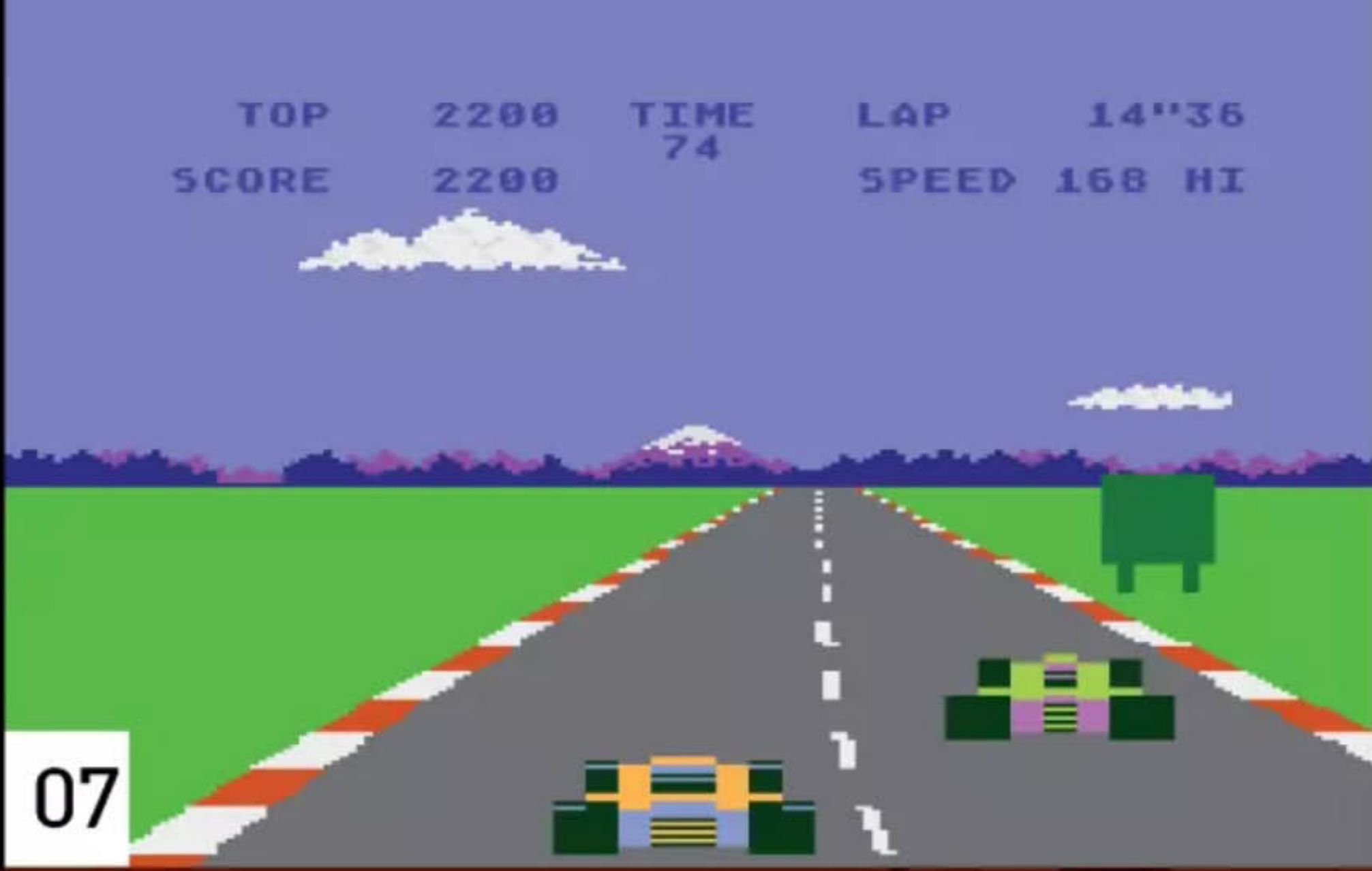
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SCORE 2200 SPEED 168 HI

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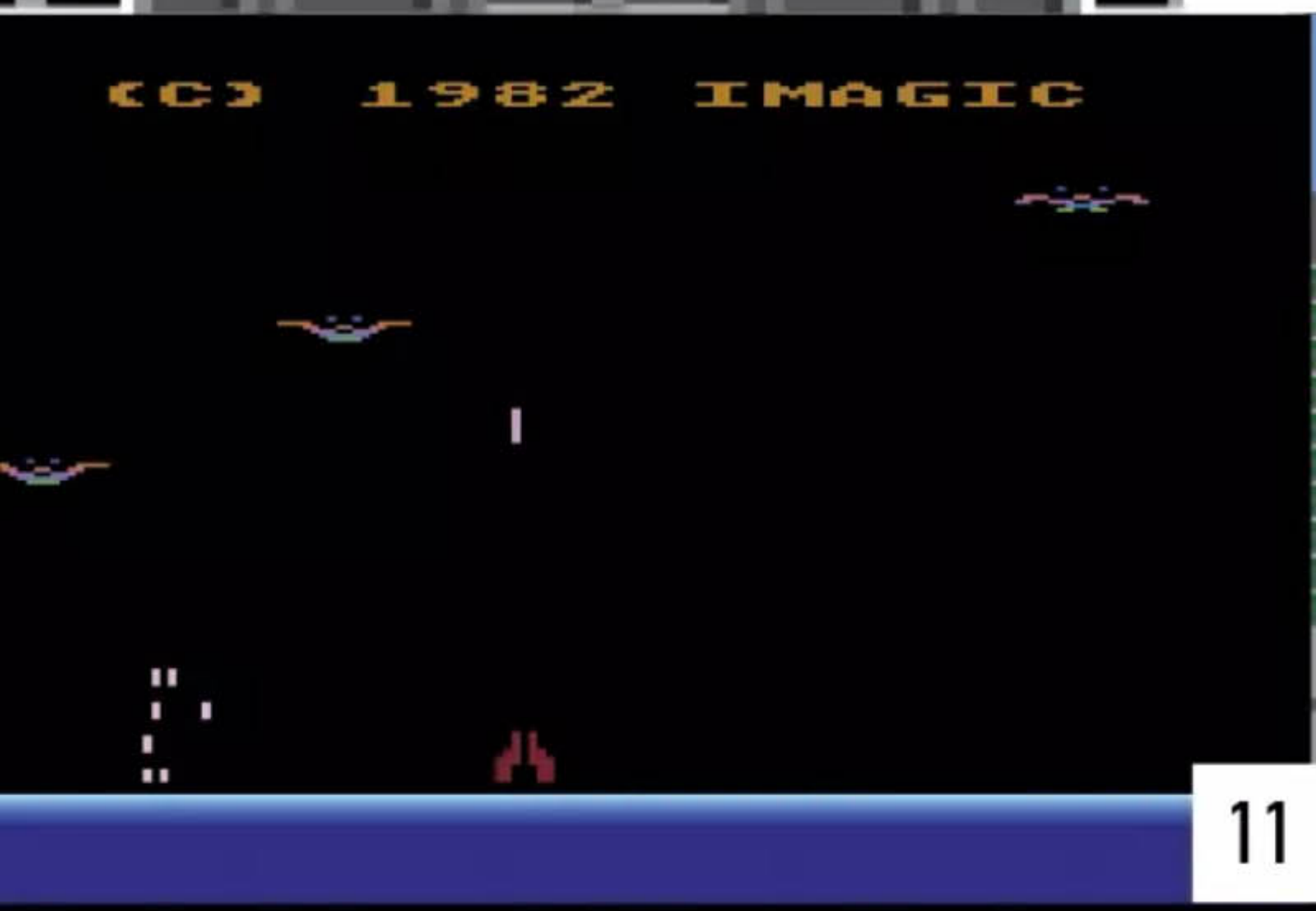
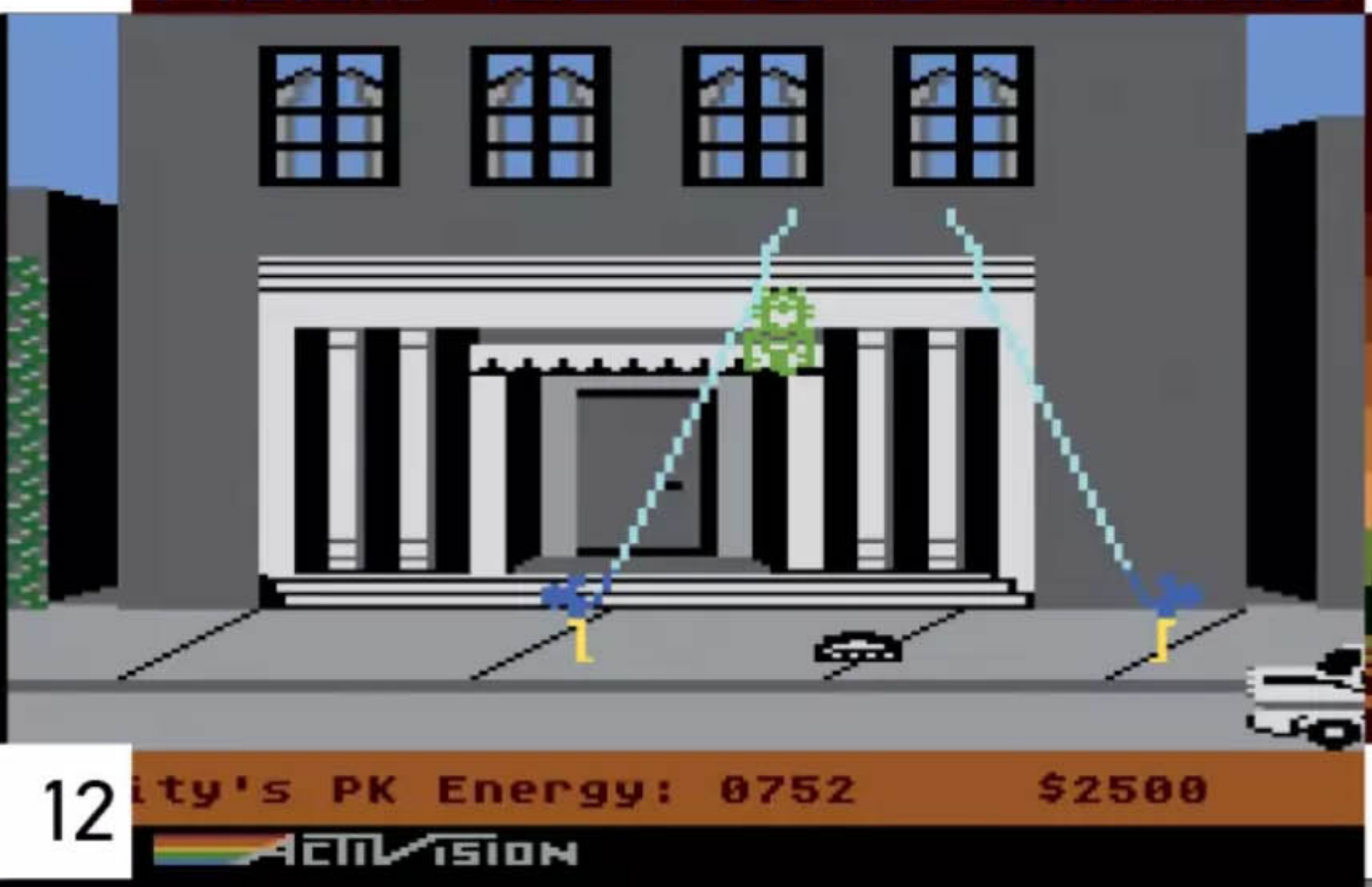
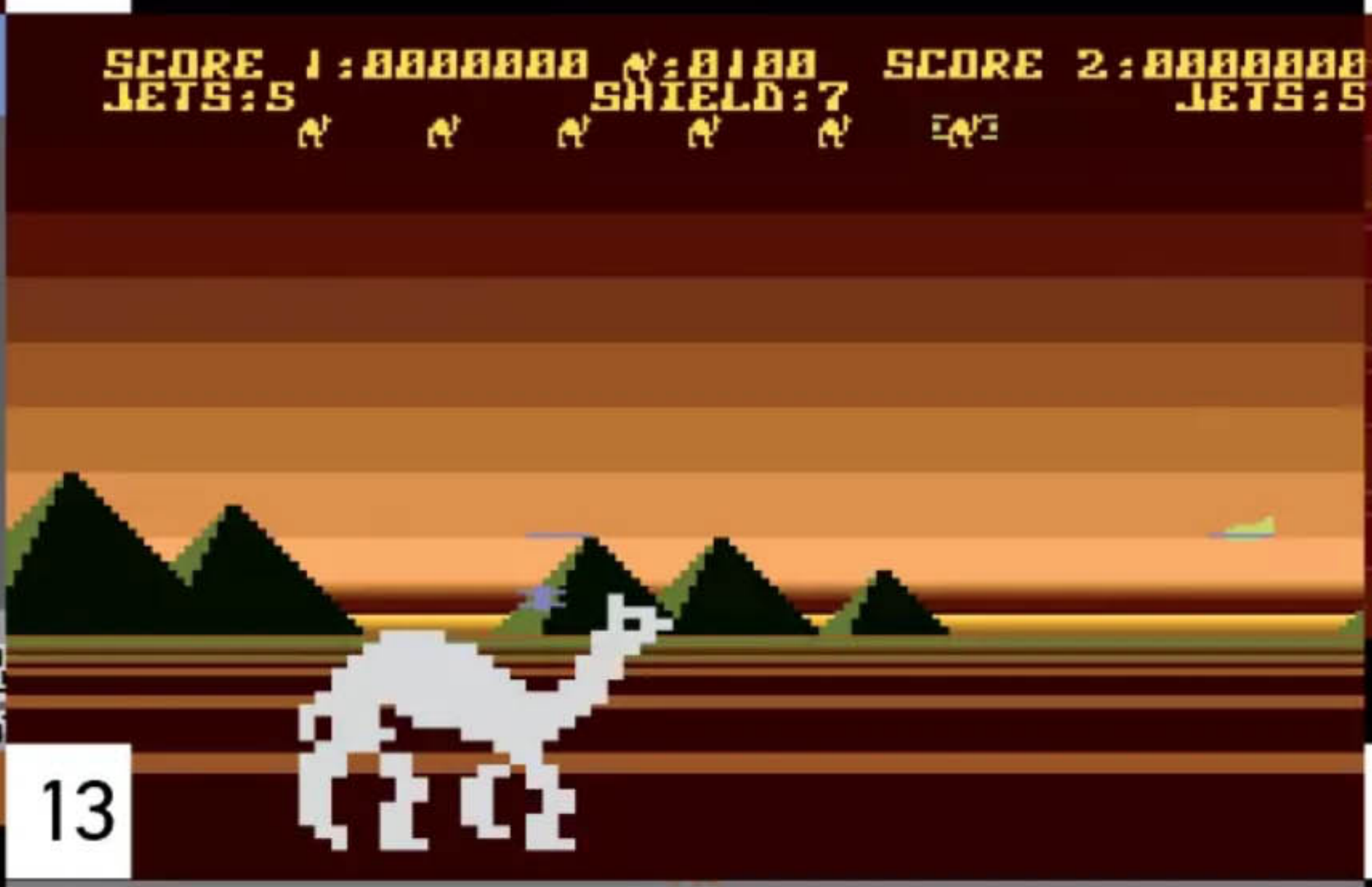

(C) 1982 IMAGIC

11


ty's PK Energy: 0752 $2500
ACTIVISION

12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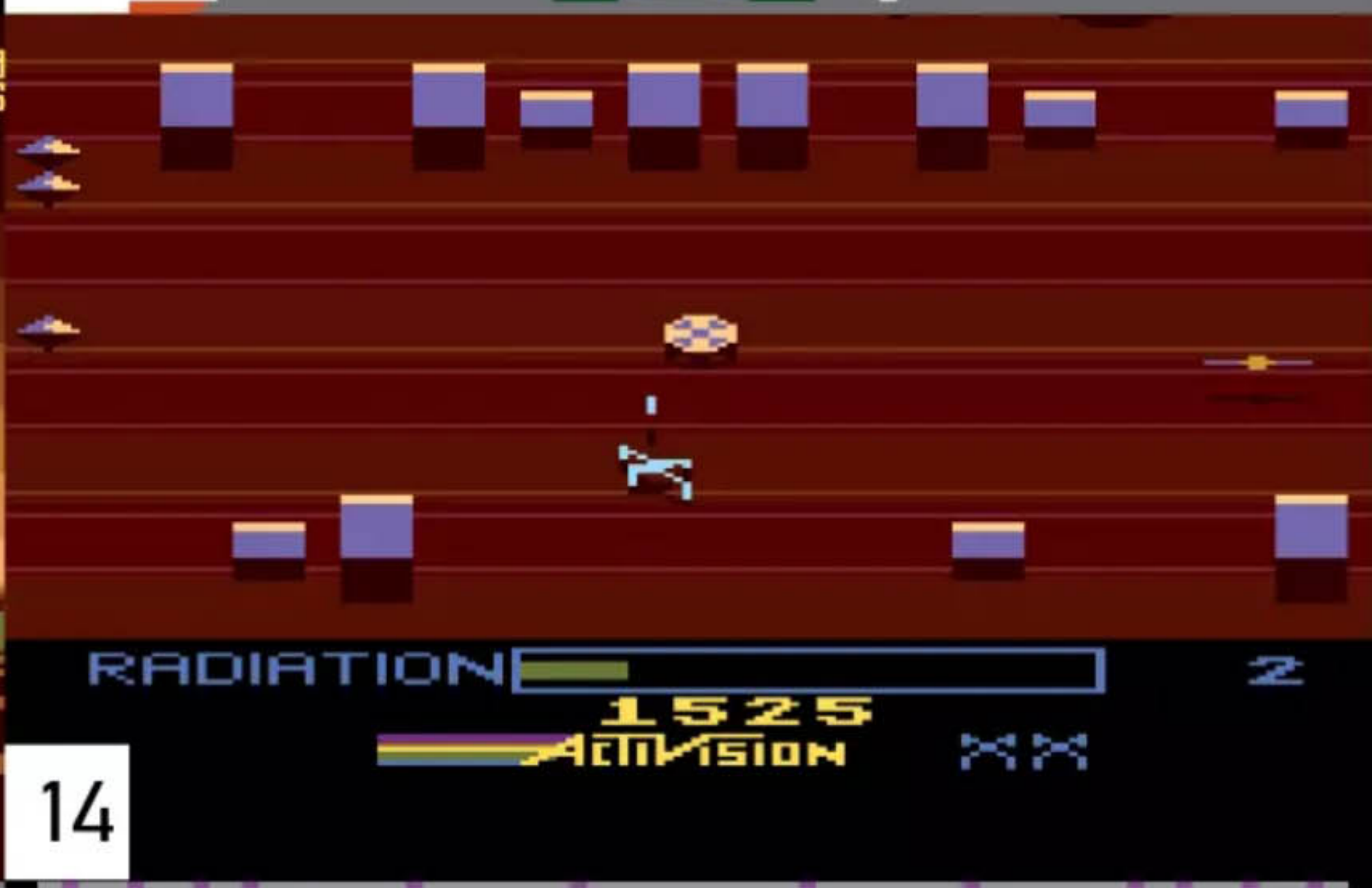
JETS:5
SHIELD:7
SCORE 2:0000000
JETS:5

13


RADIATION
1525
ACTIVISION

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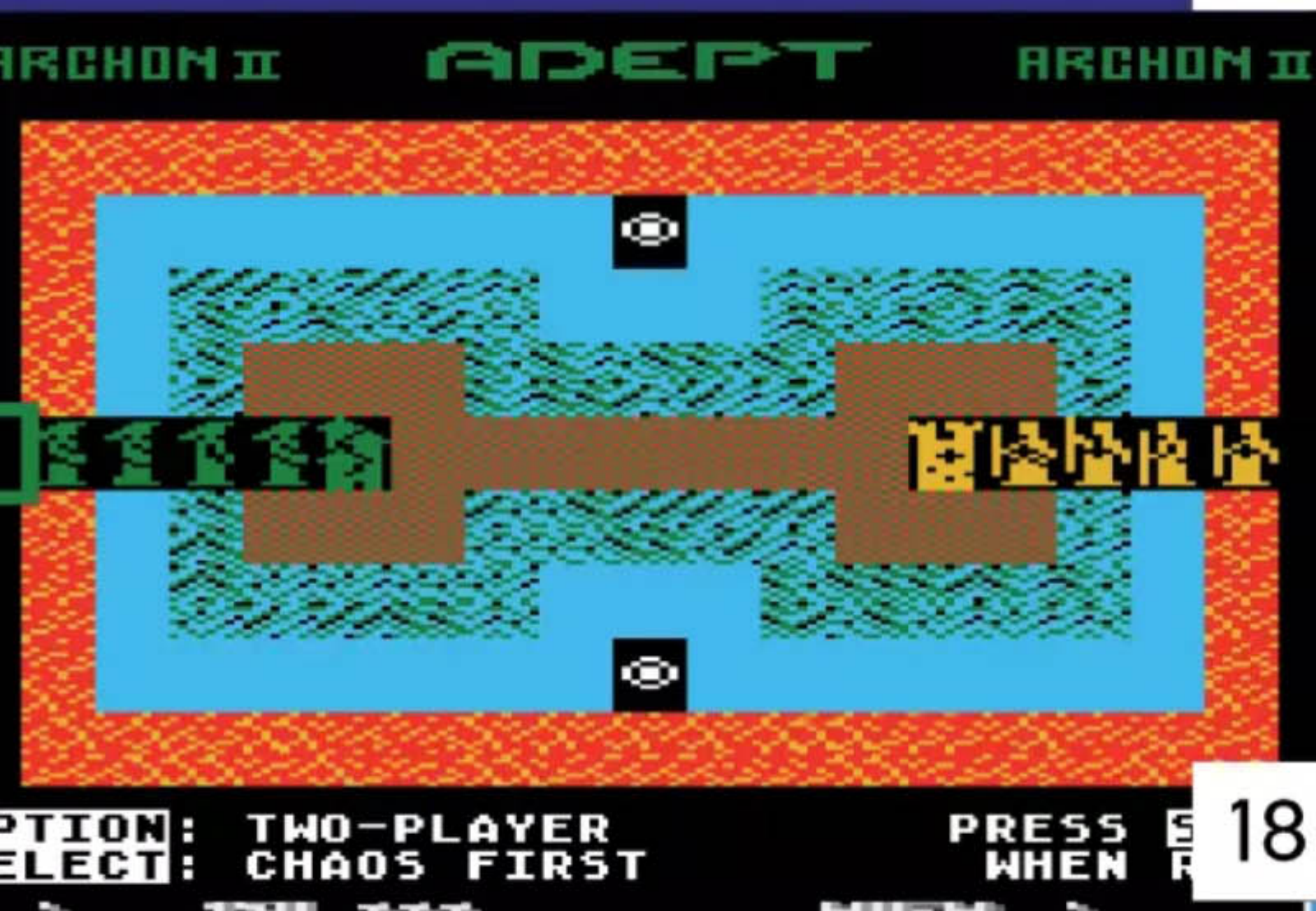
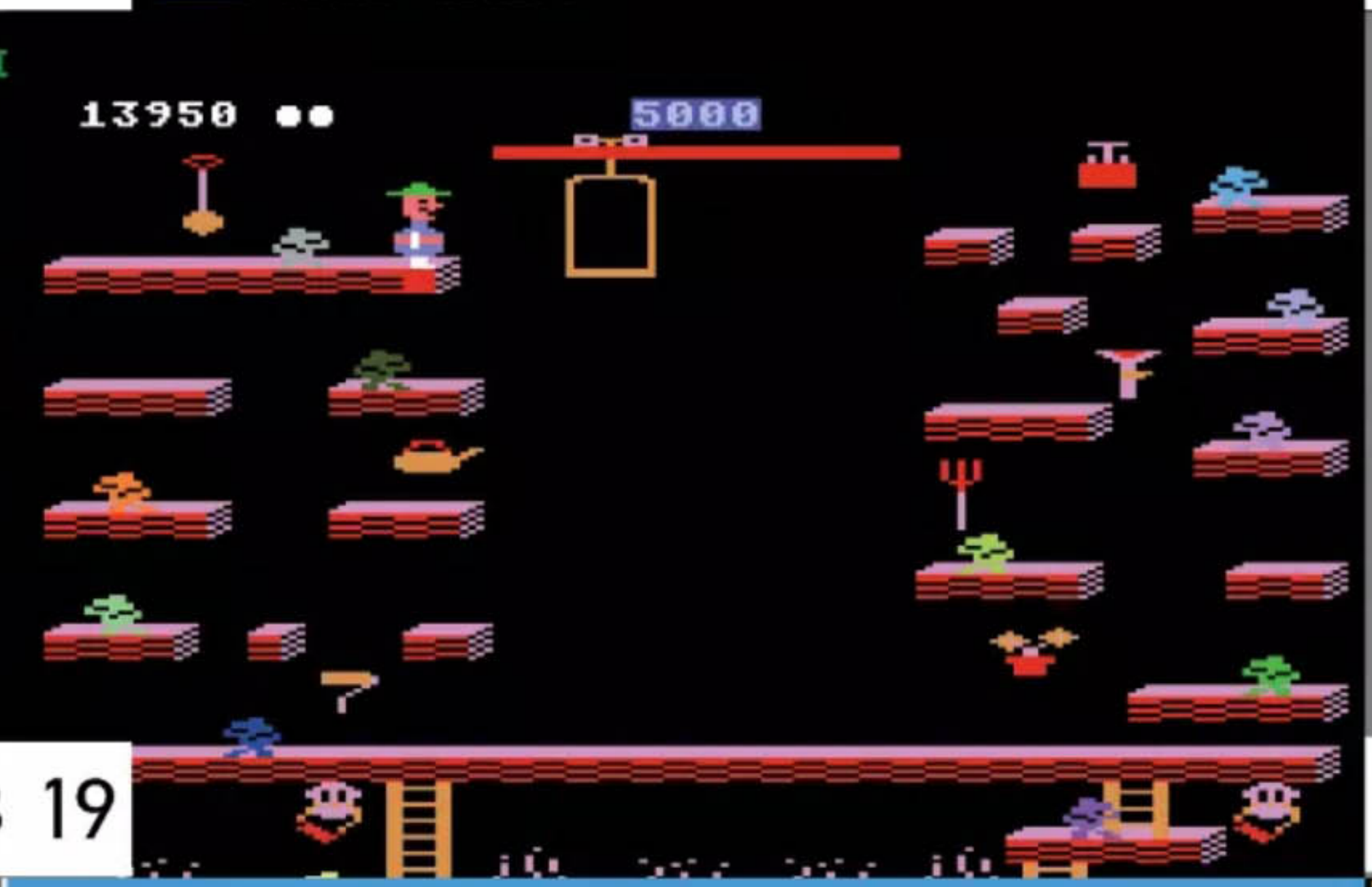

ARCHON II ADEPT ARCHON II
TWO-PLAYER
CHAOS FIRST
PRESS
WHEN

18



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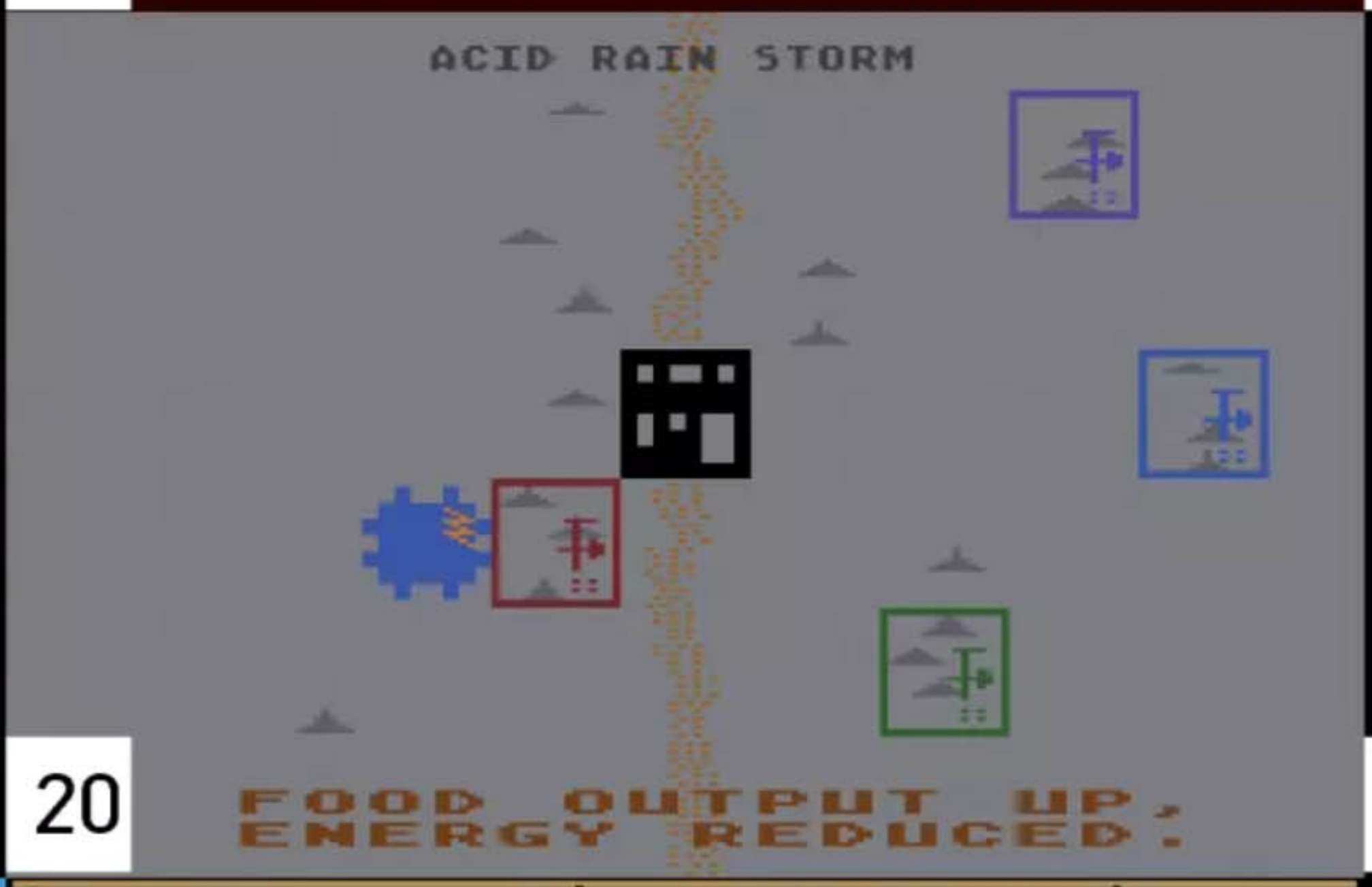
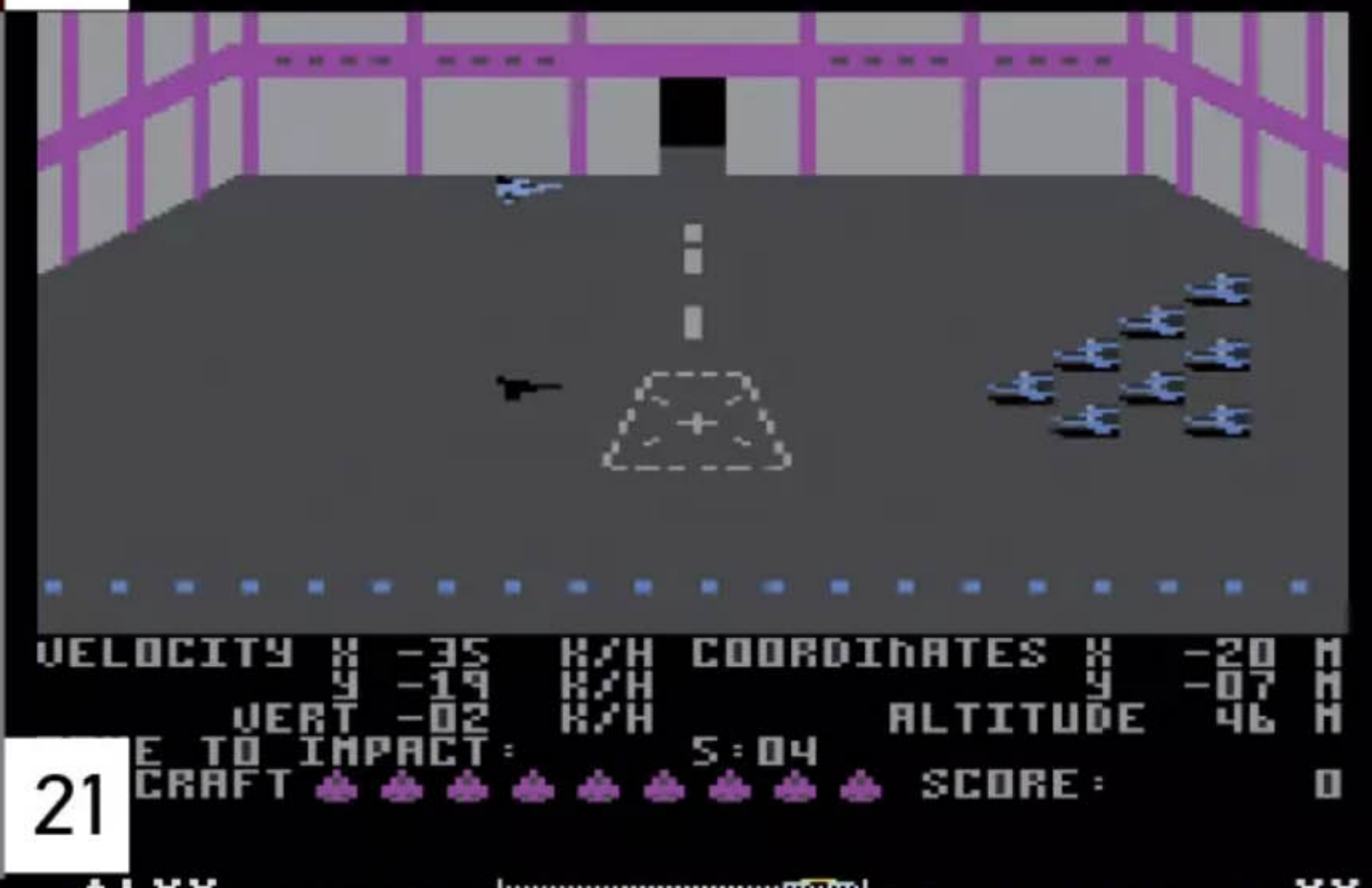
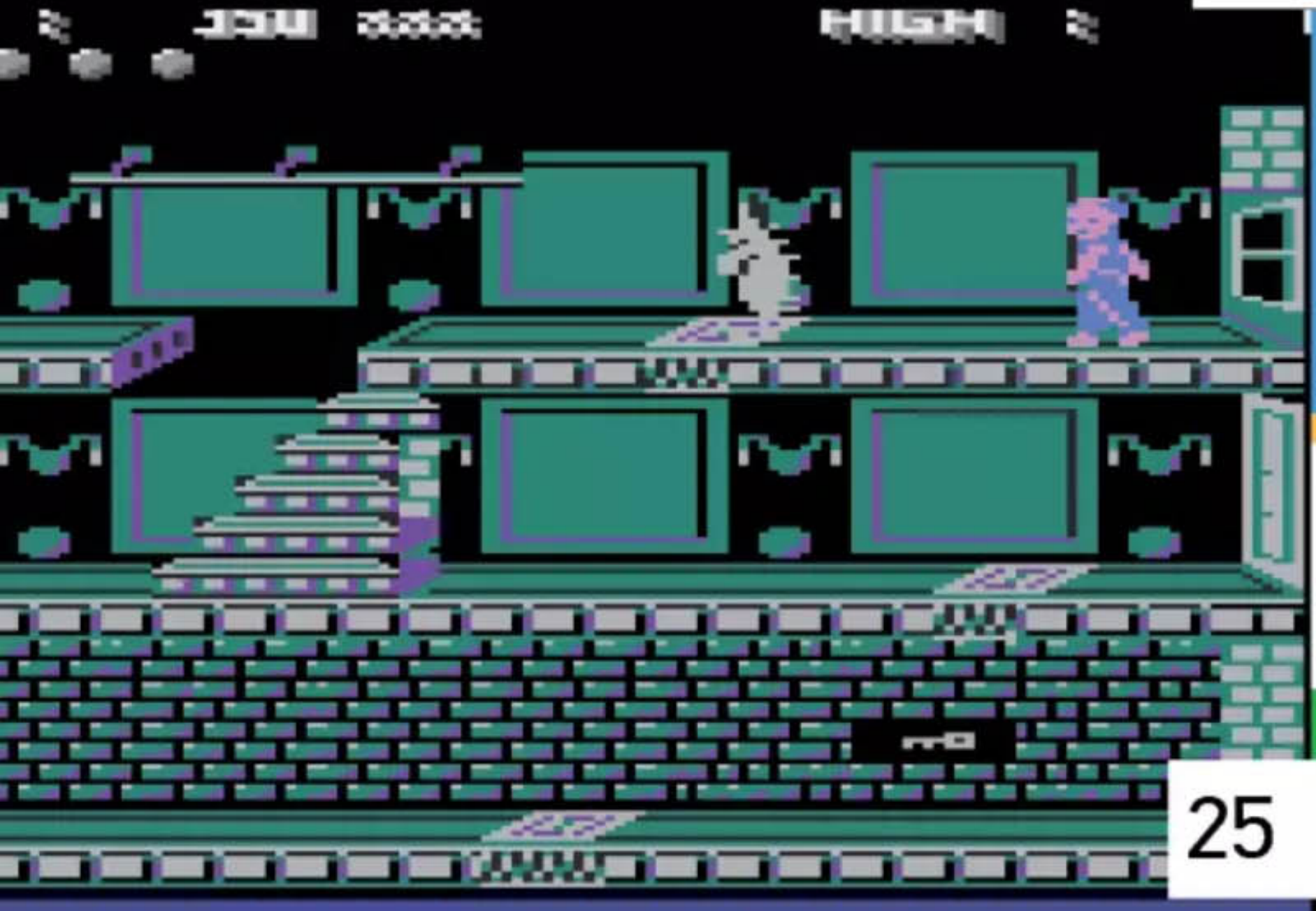

ACID RAIN STORM
FOOD OUTPUT UP:
ENERGY REDUCED:

20


VELOCITY
COORDINATES
ALTITUDE 46
SCORE: 0

21



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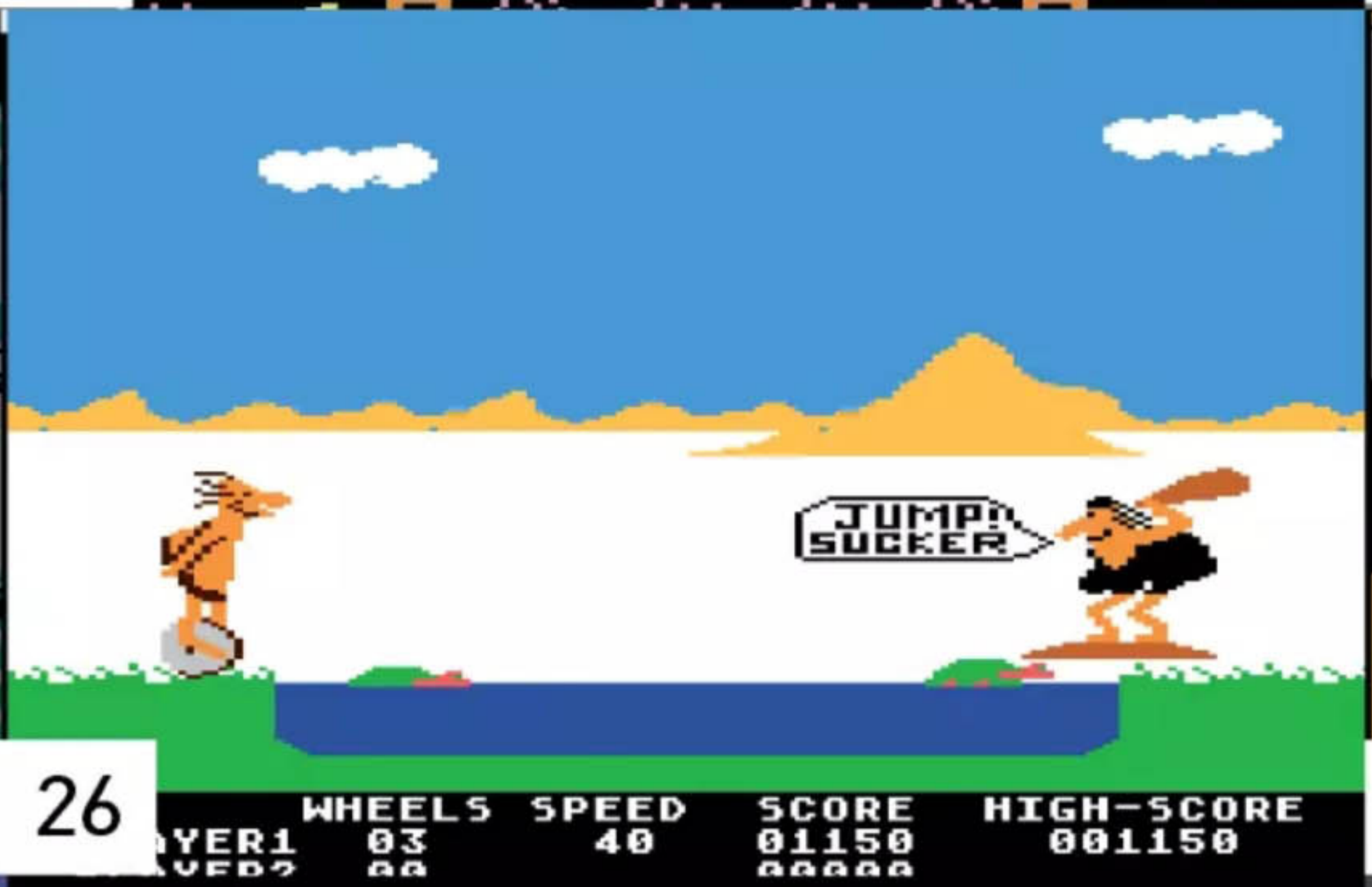
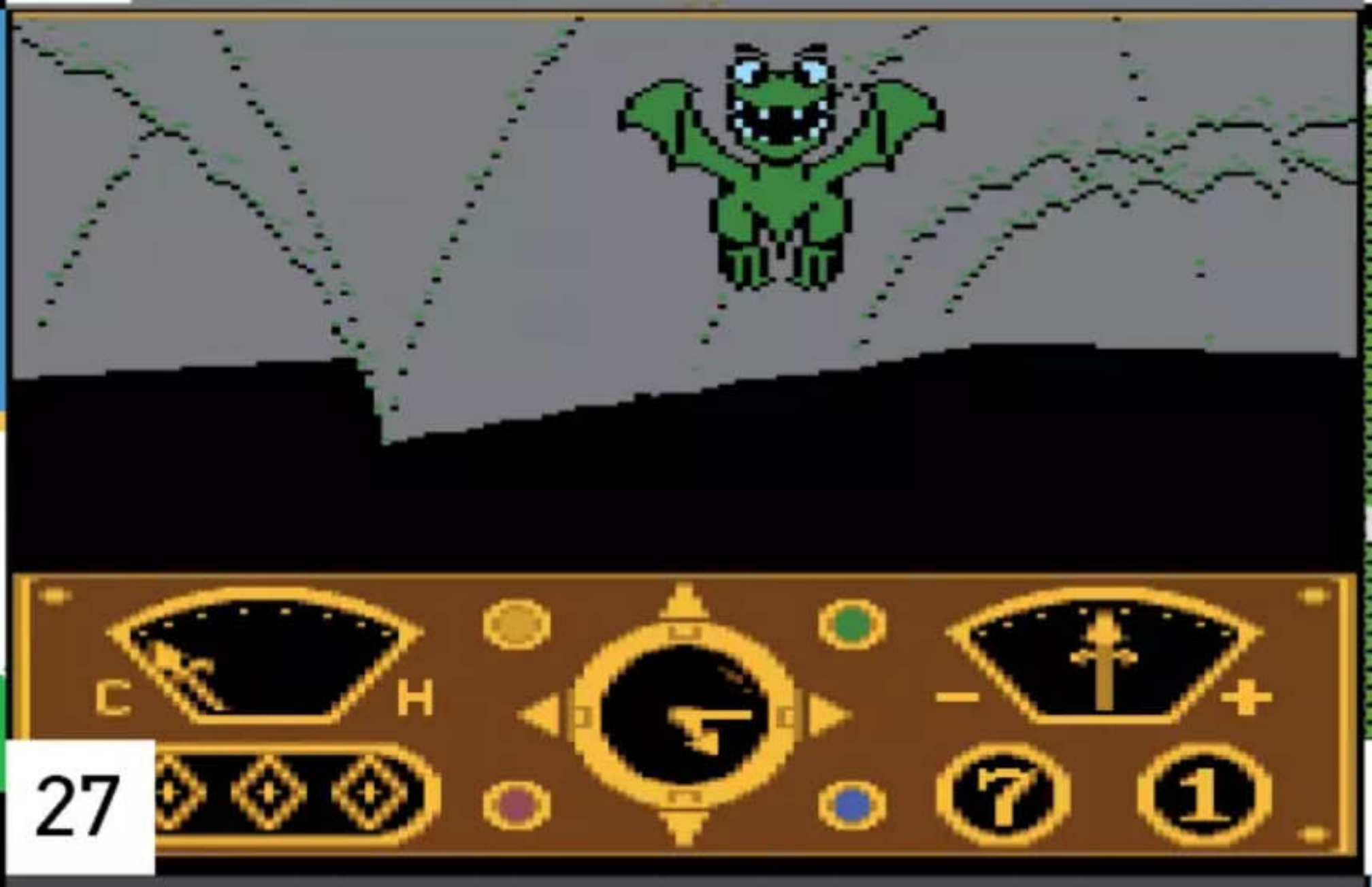

JUMP! SUCKER
WHEELS 03 SPEED 40 SCORE 01150 HIGH-SCORE 001150

26



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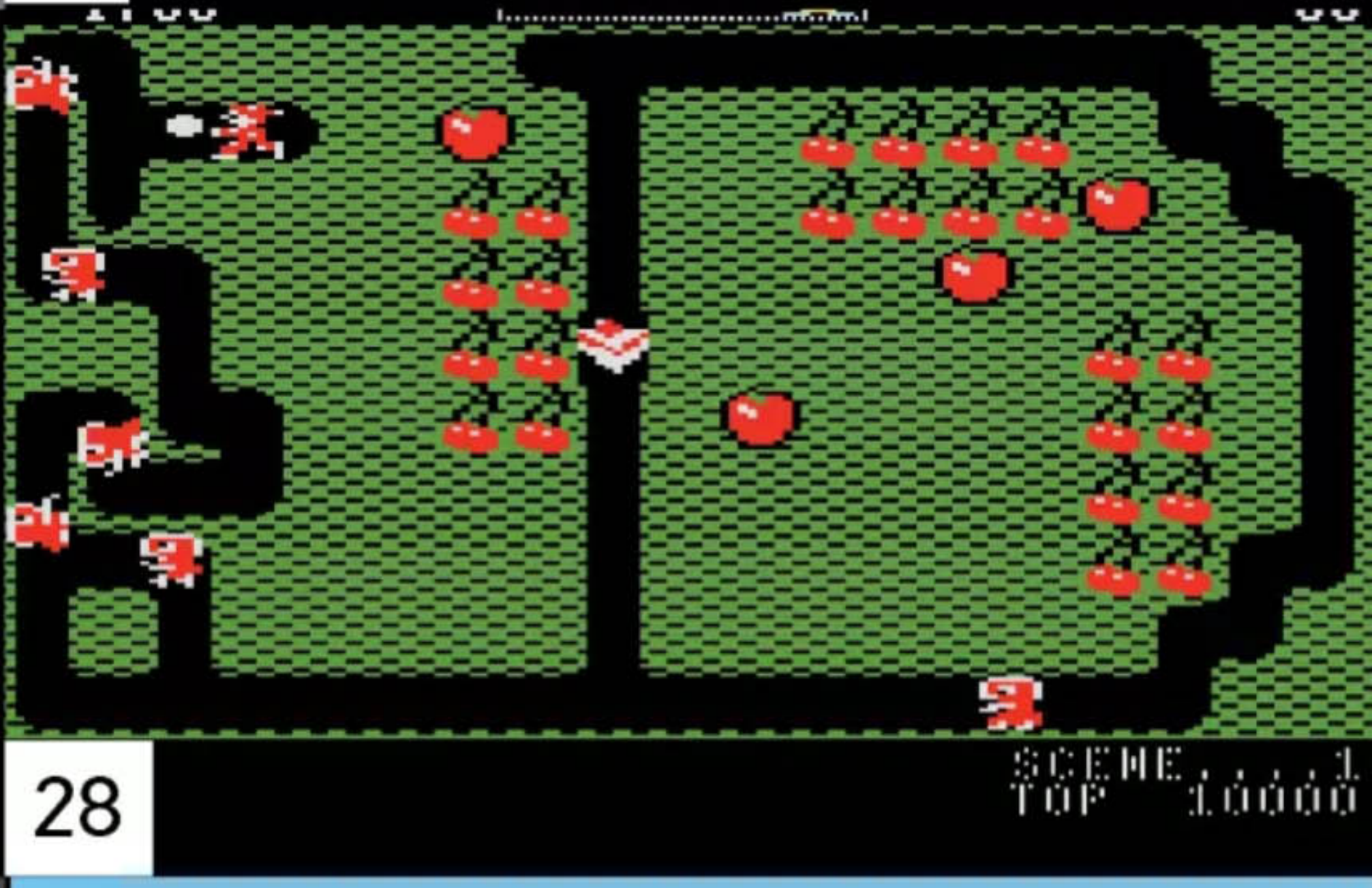
SCENE 1
TOP 10000

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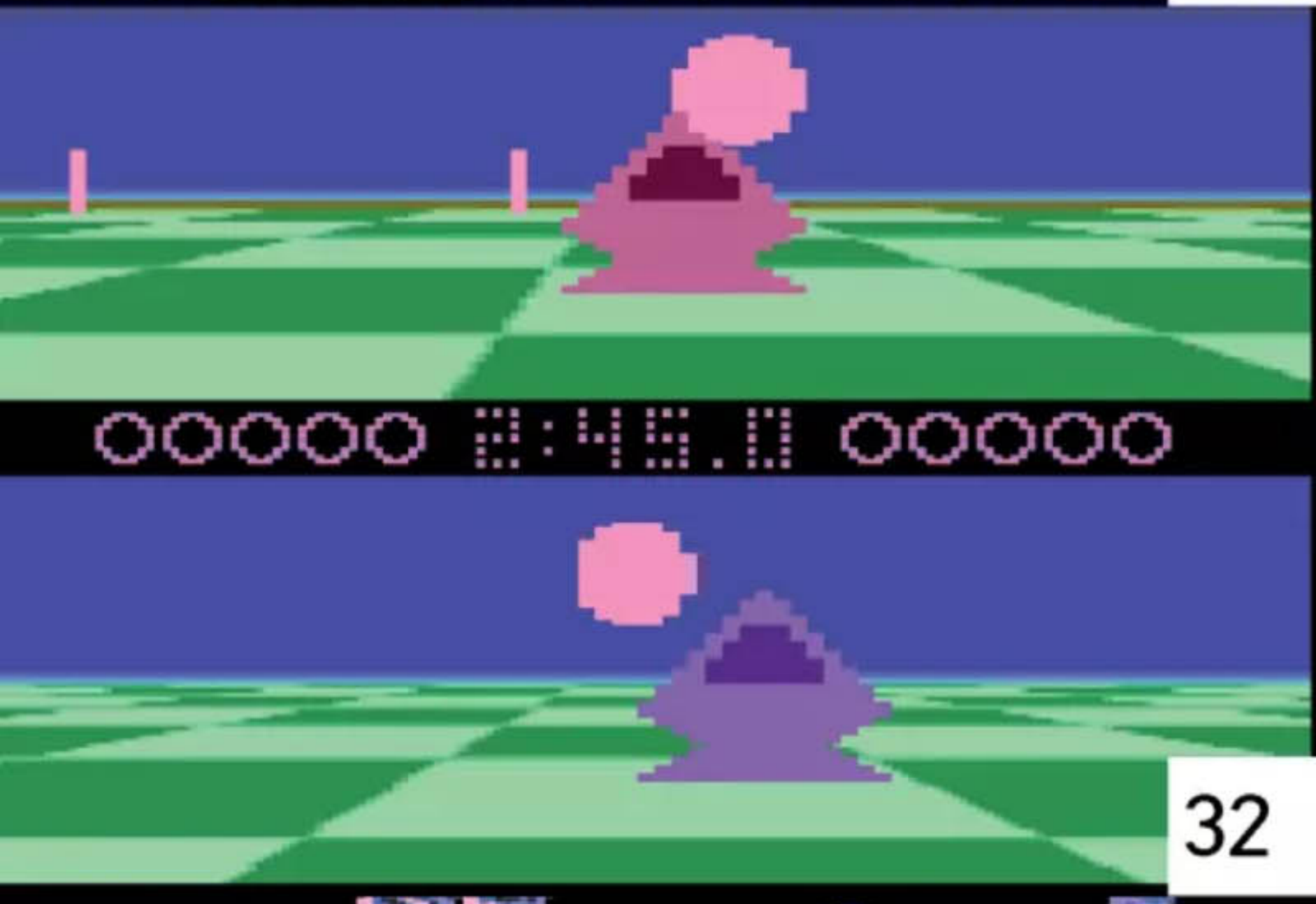
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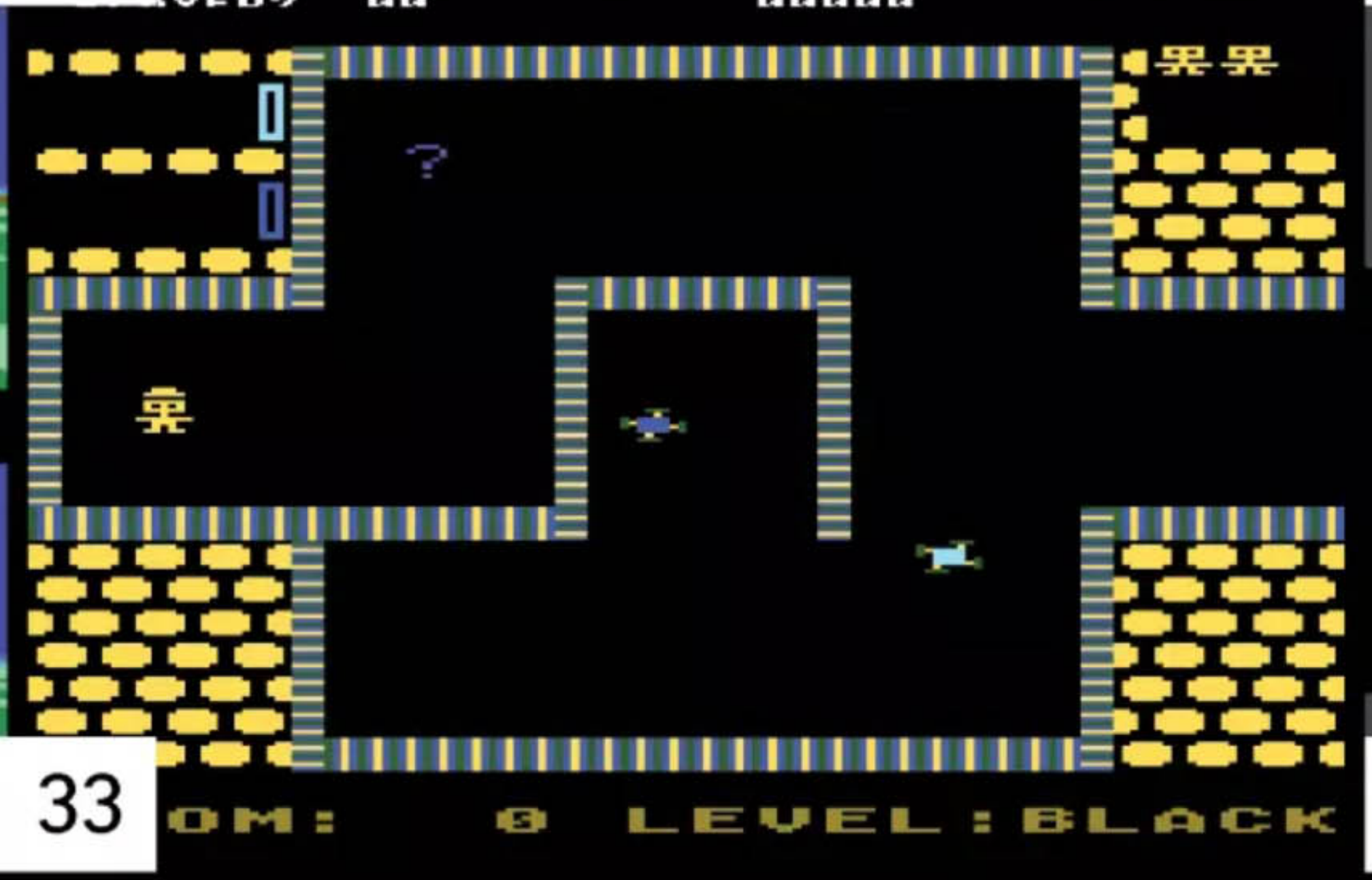
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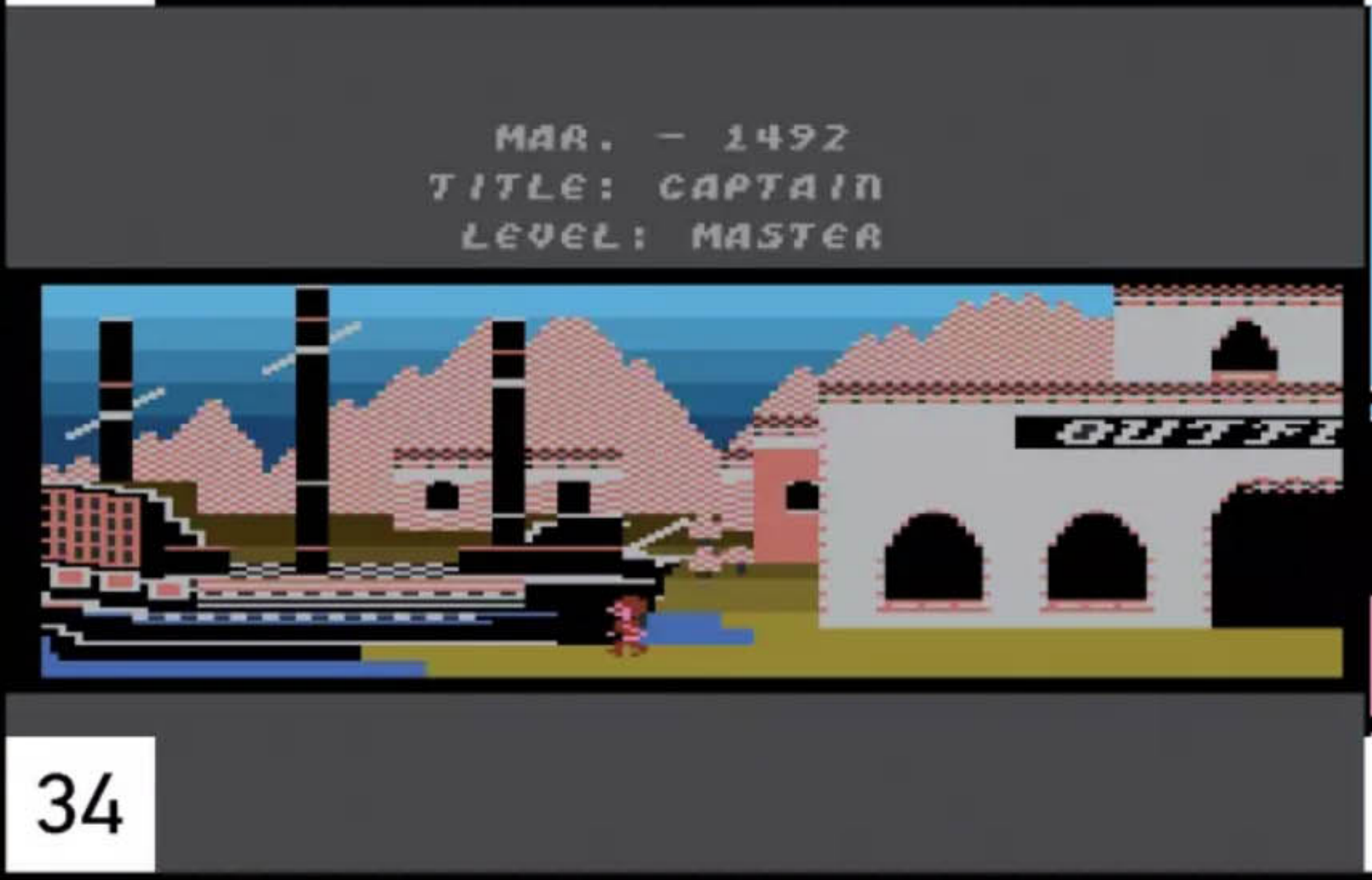
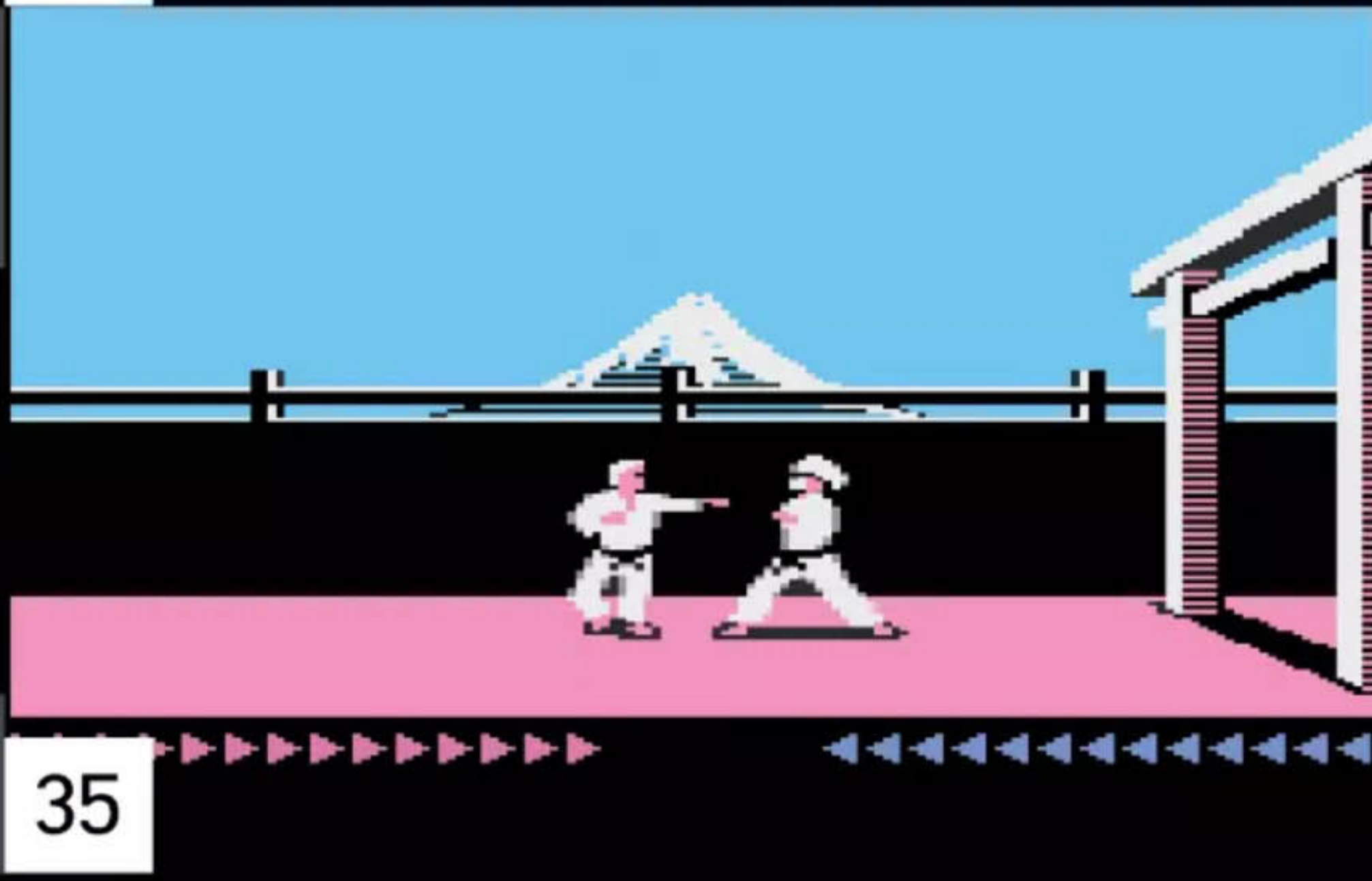

MAR. - 1492
TITLE: CAPTAIN
LEVEL: MASTER

34



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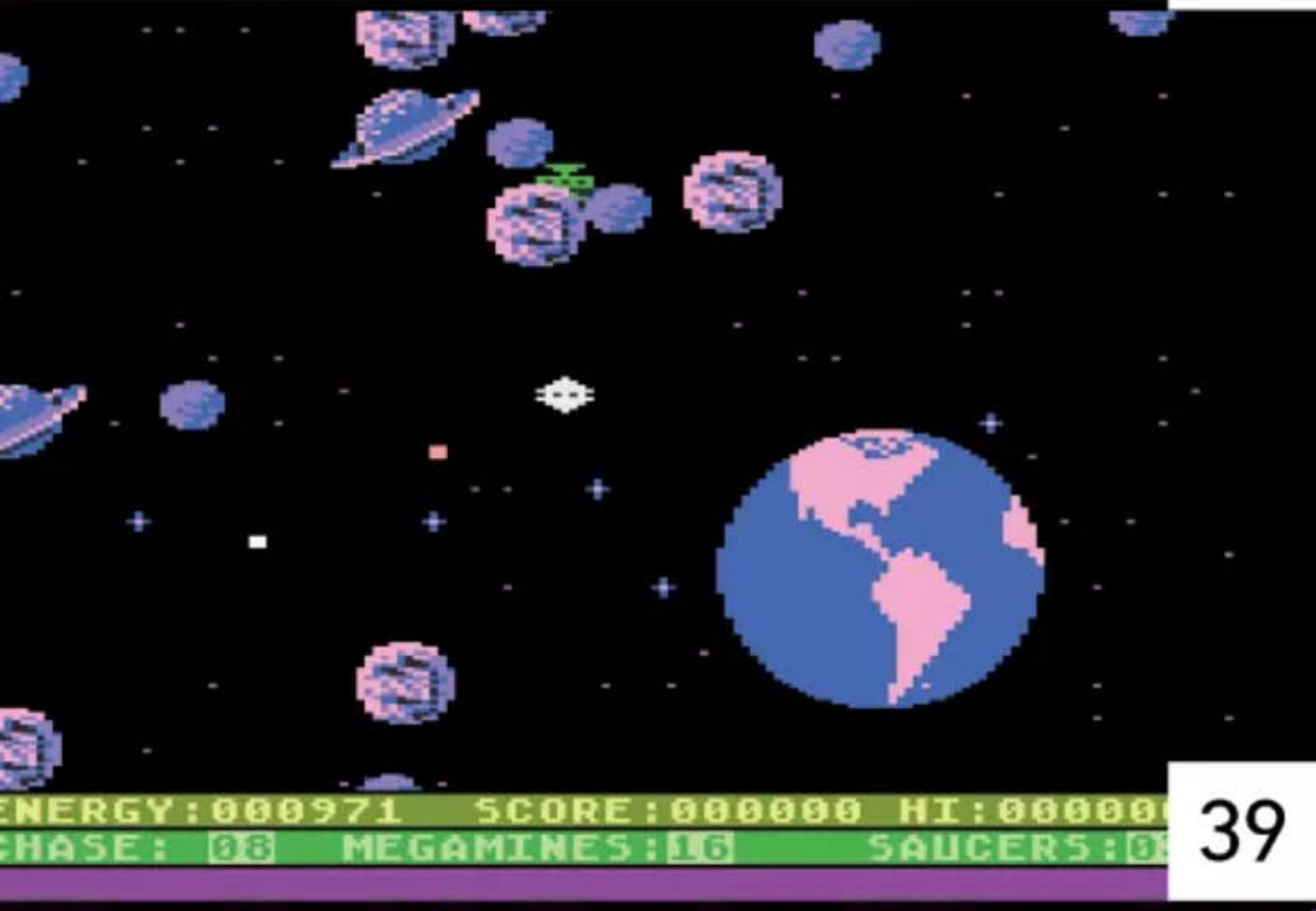
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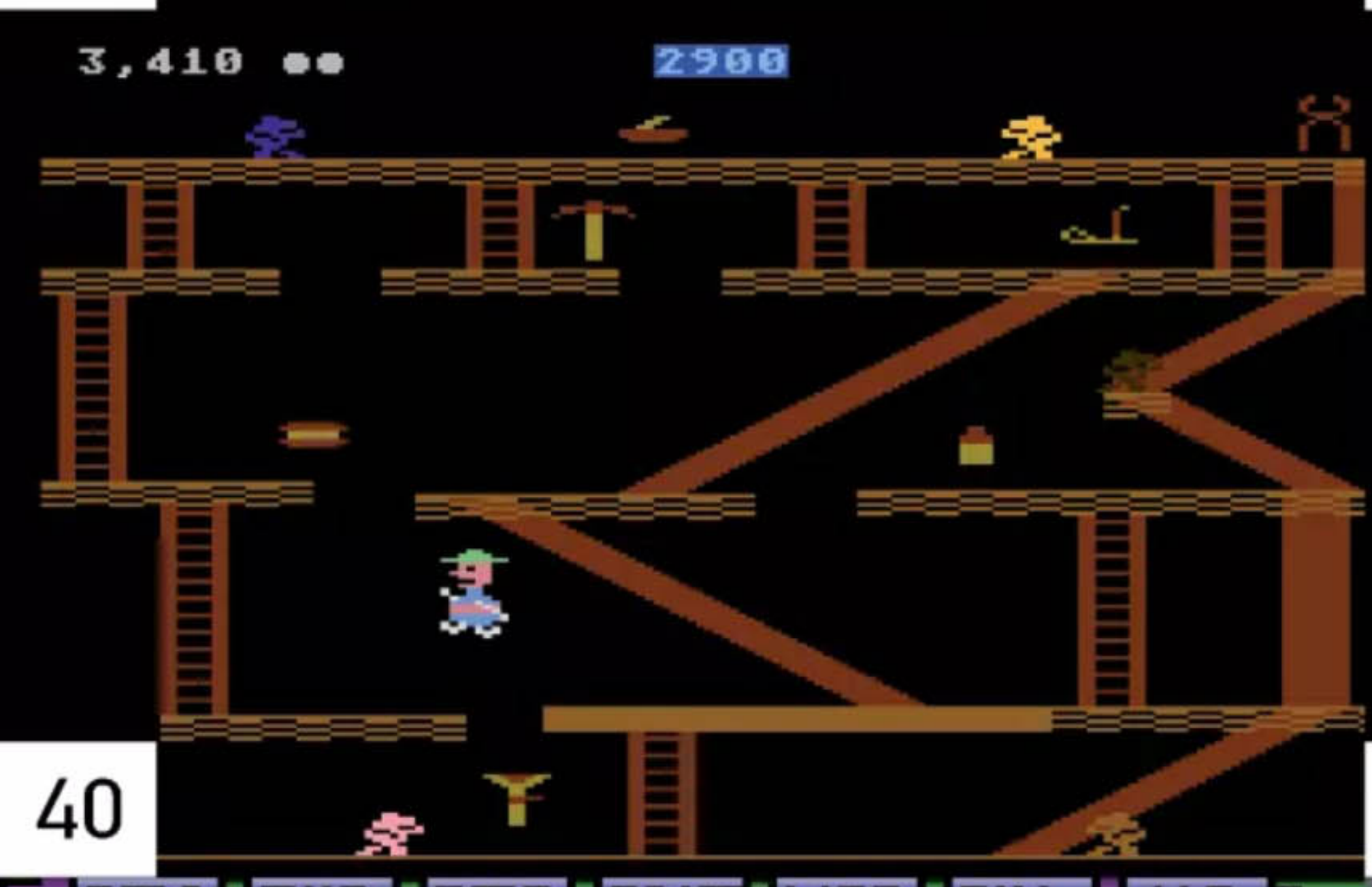
MEGAMINES:16
SAUCERS

39



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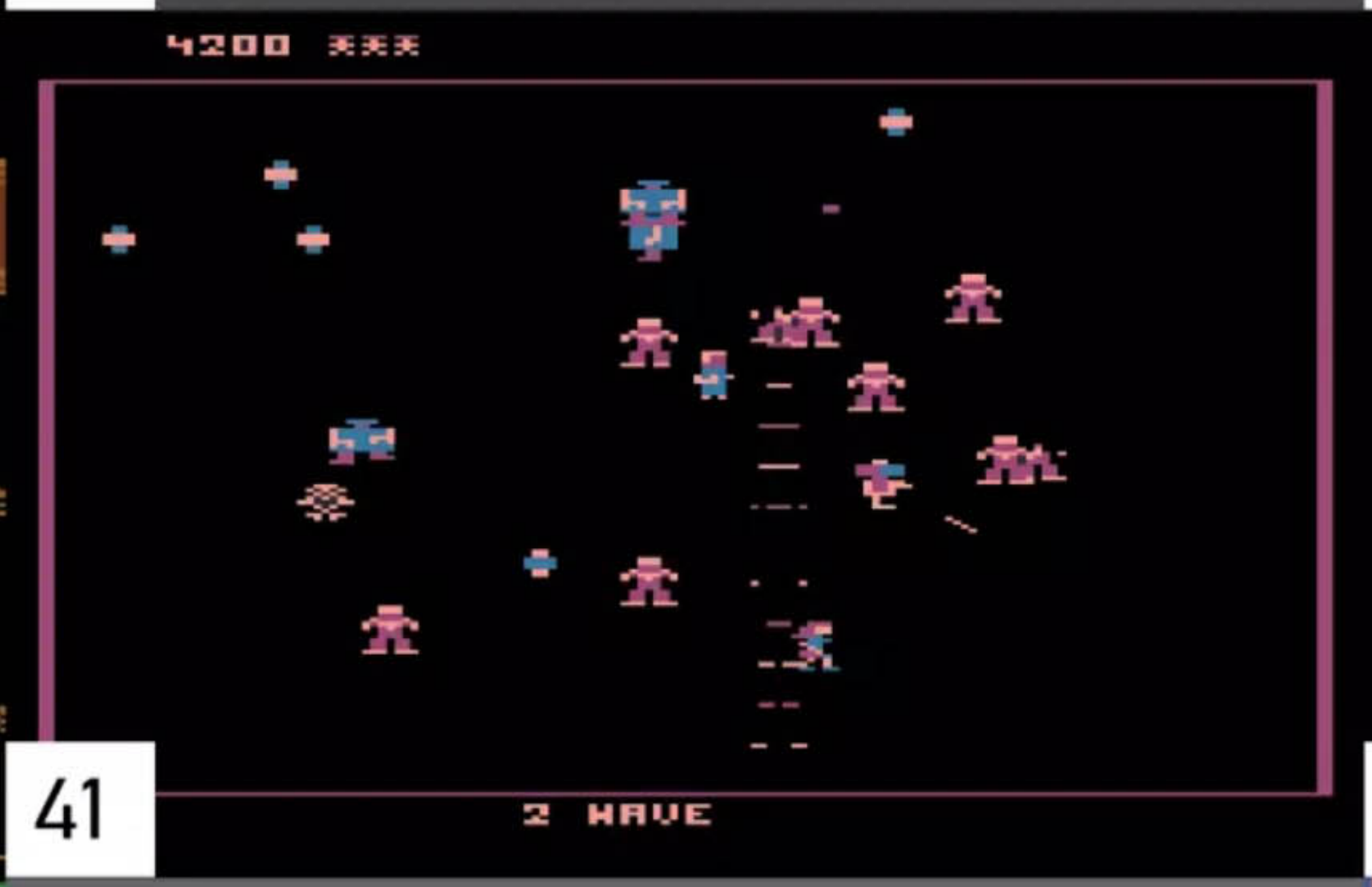

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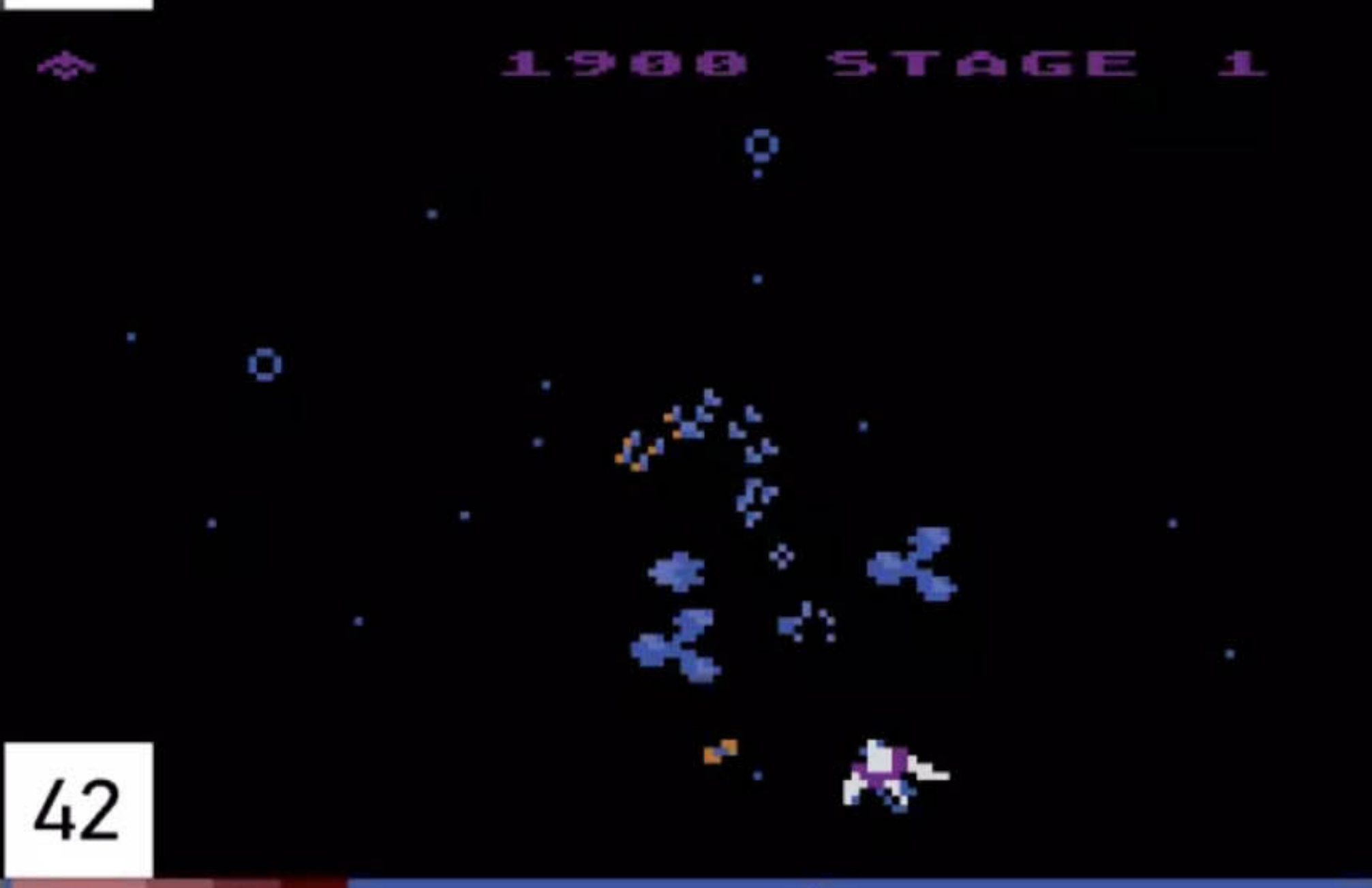
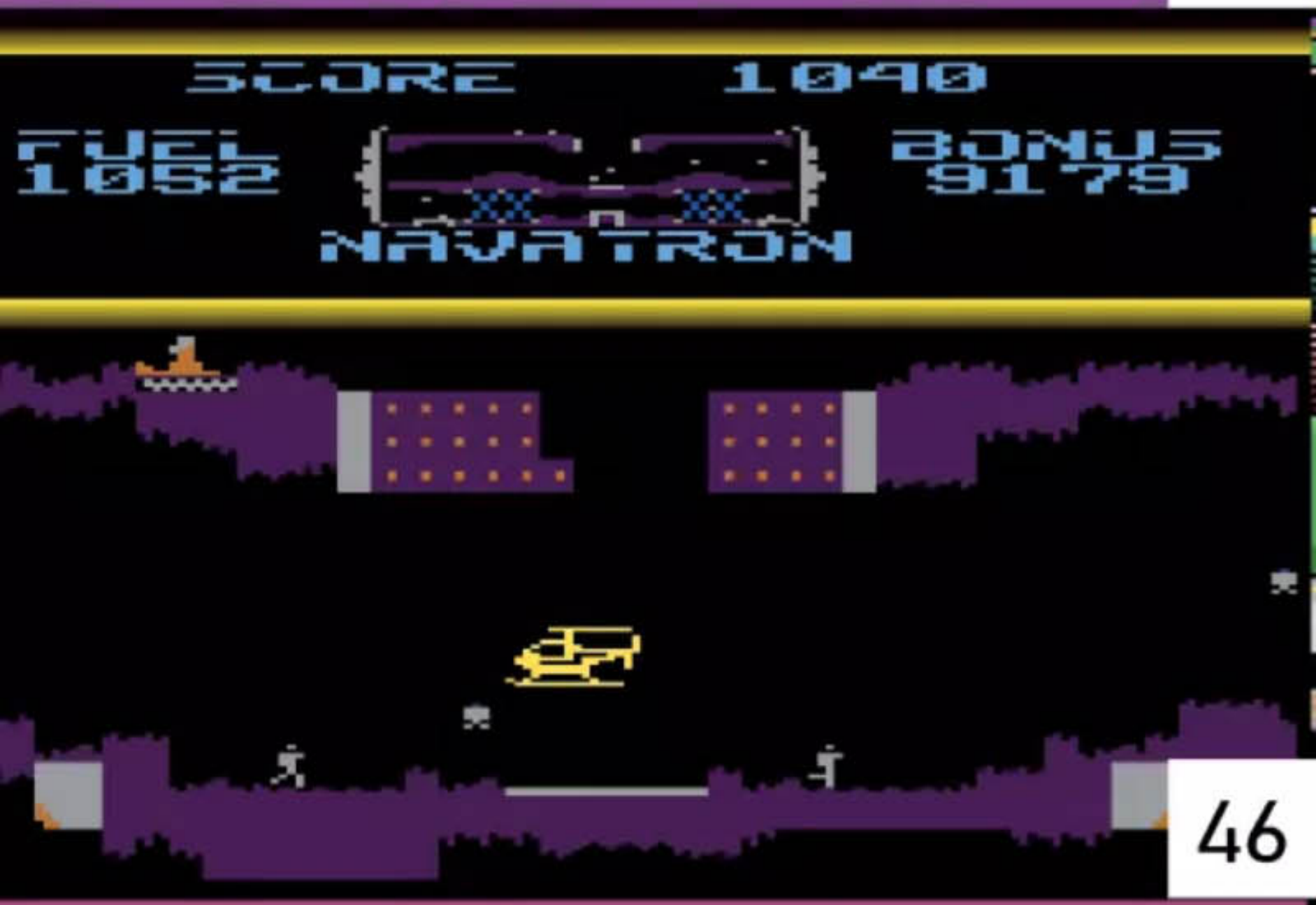

1900 STAGE 1

42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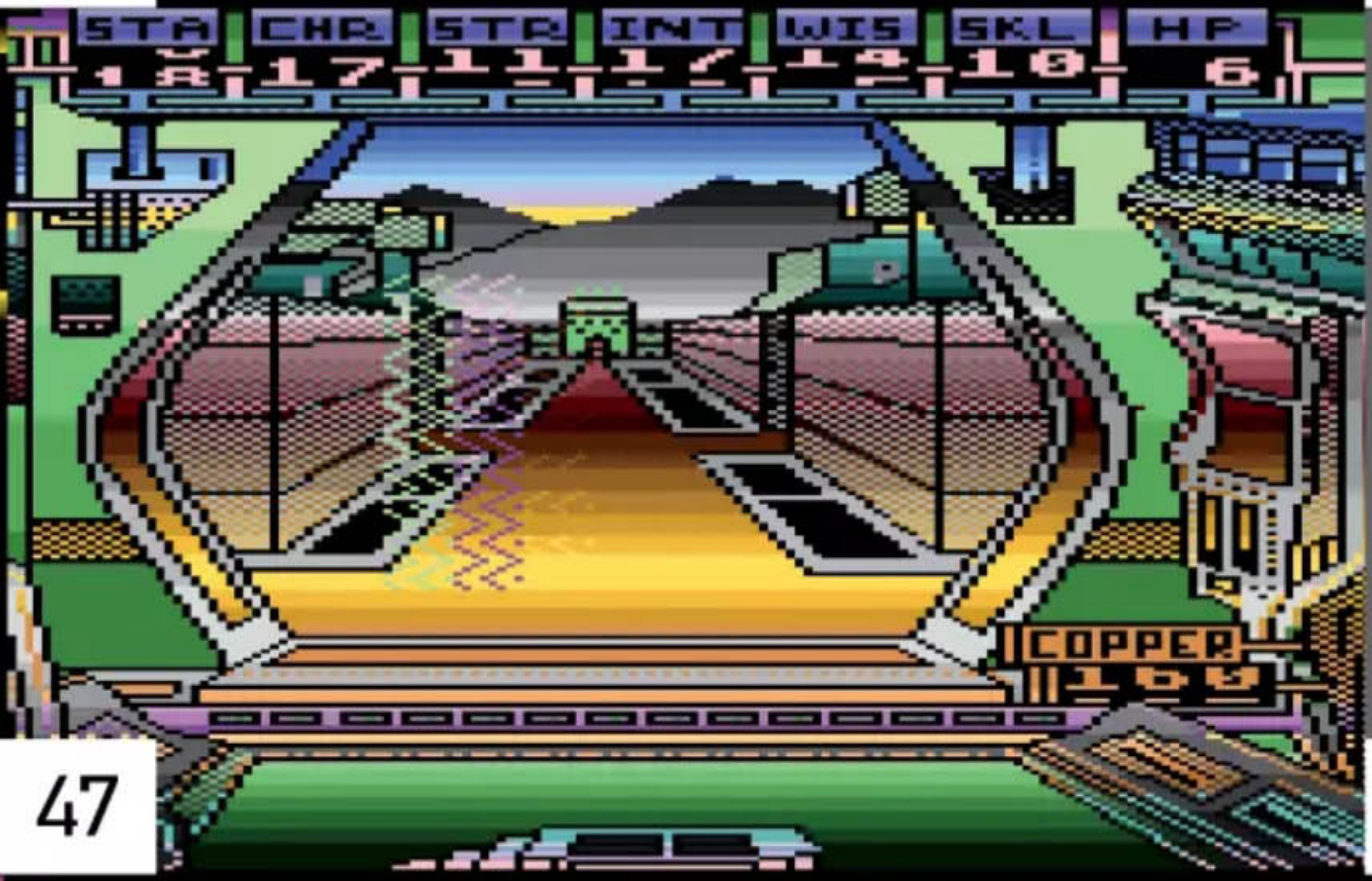
FUEL 1052
BONUS 9179
NAVATRON

46


STR CHR STR INT WIS SKL HP
COPPER 166

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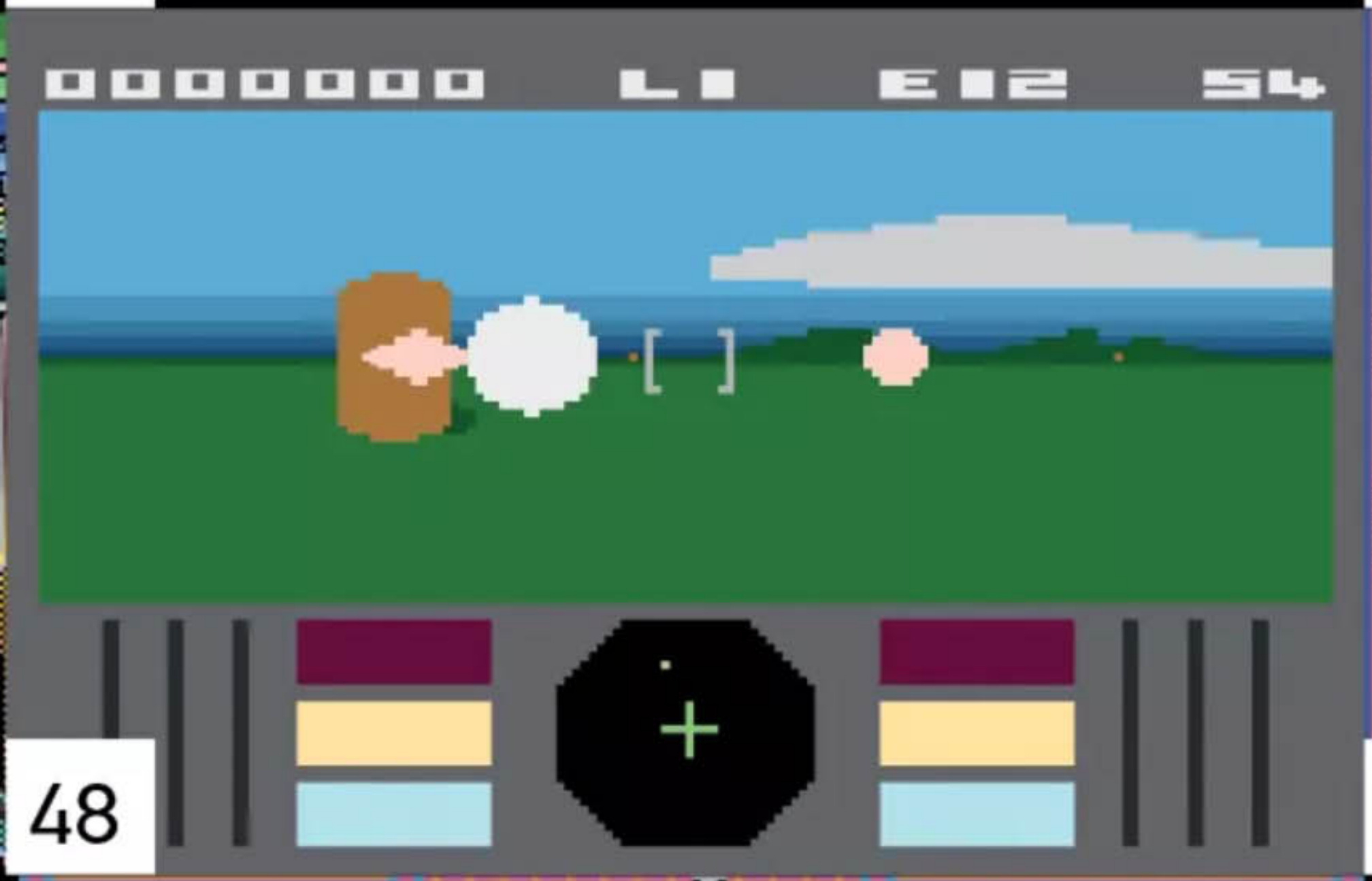

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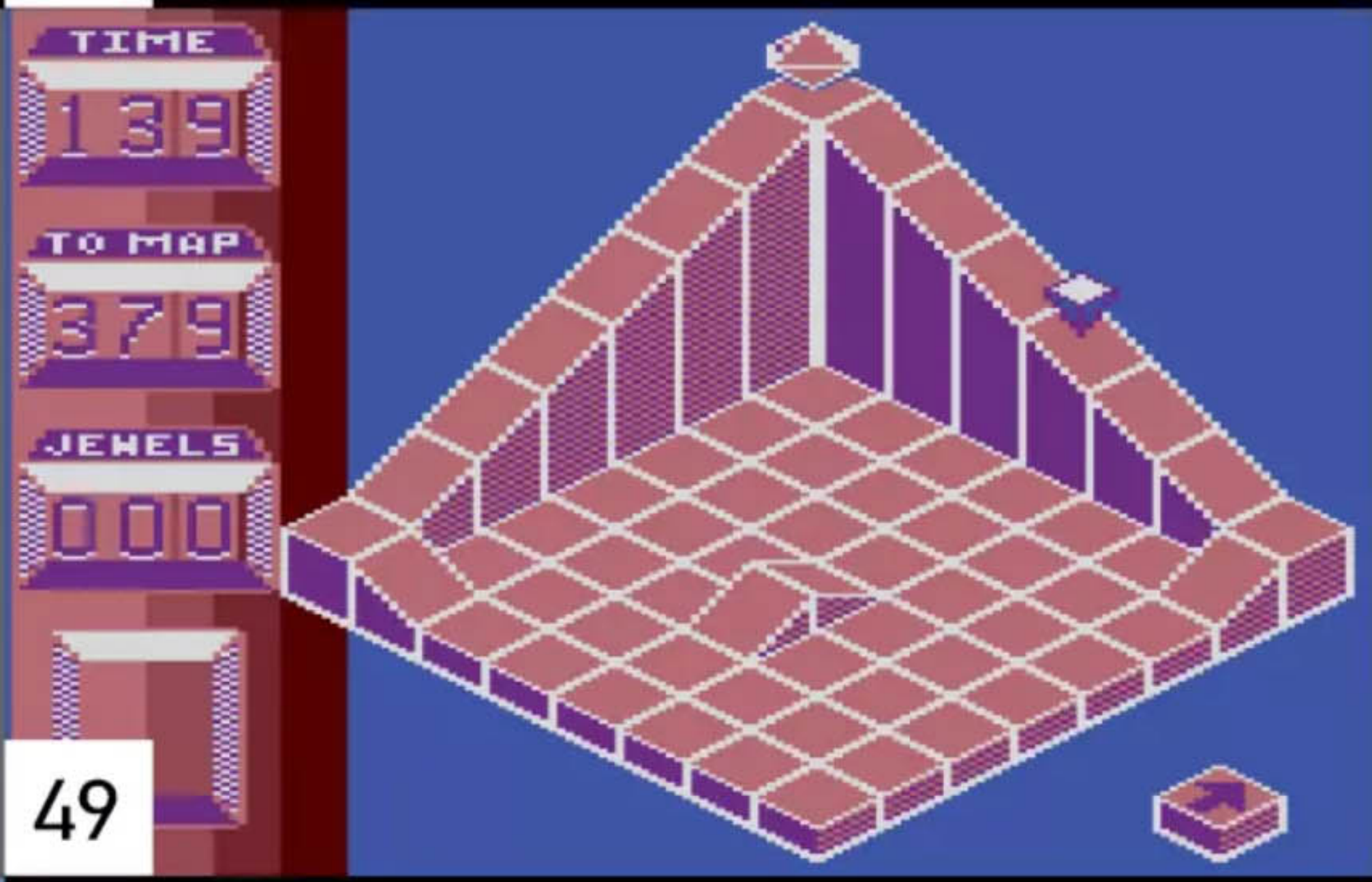
TIME 139
TO MAP 379
JEWELS 000

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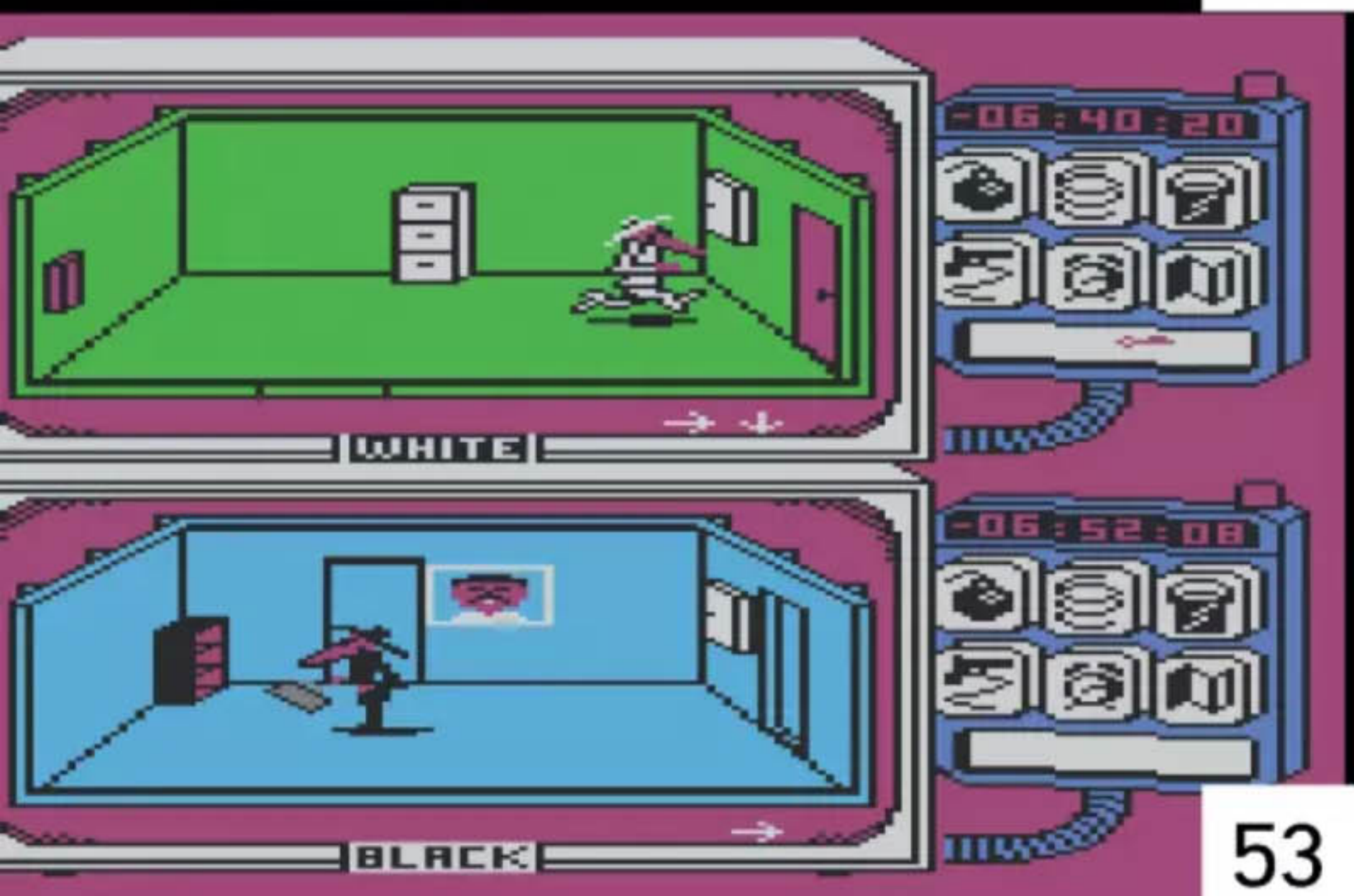
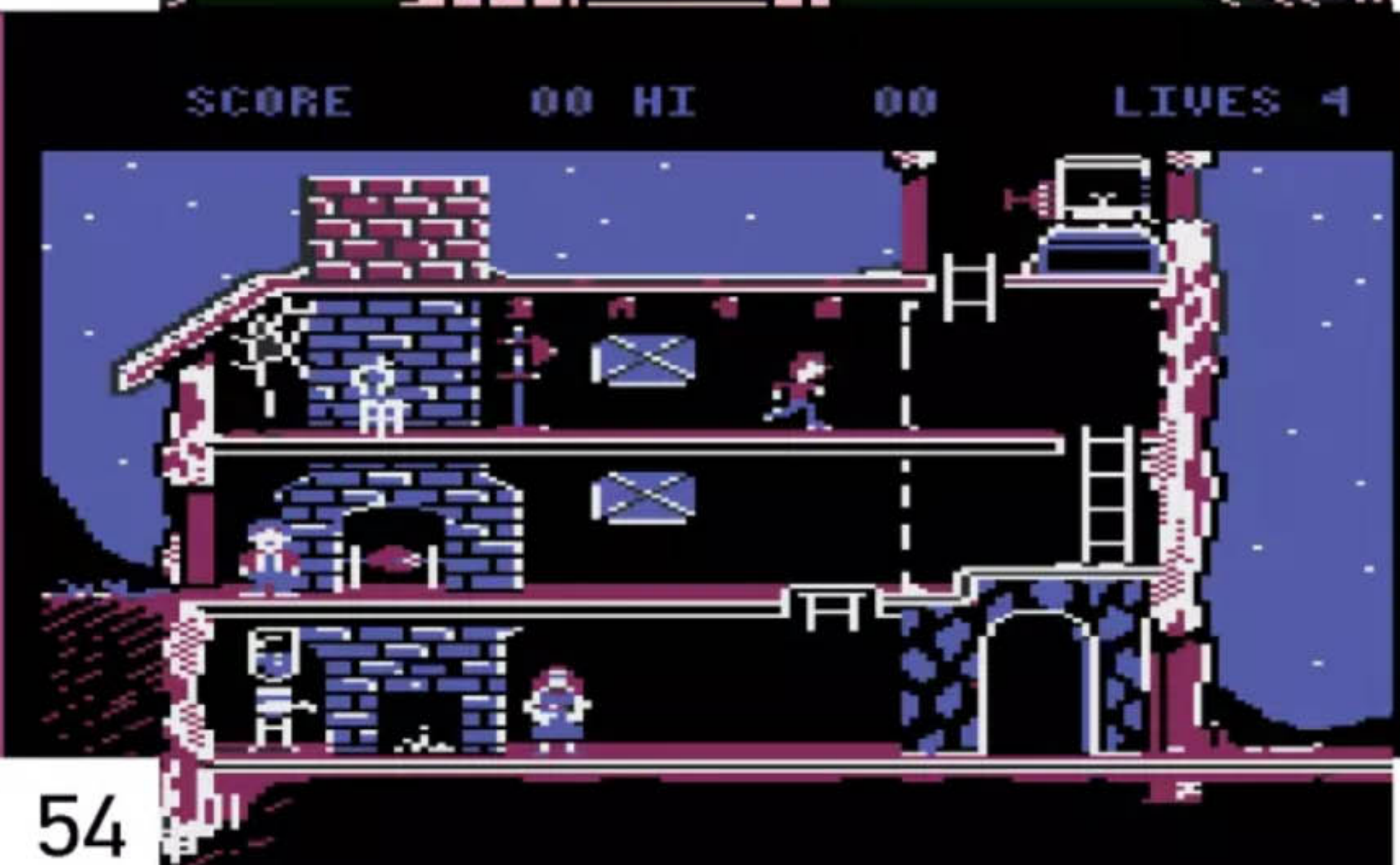

06:40:20
WHITE
BLACK

53


SCORE 00 HI 00 LIVES 4

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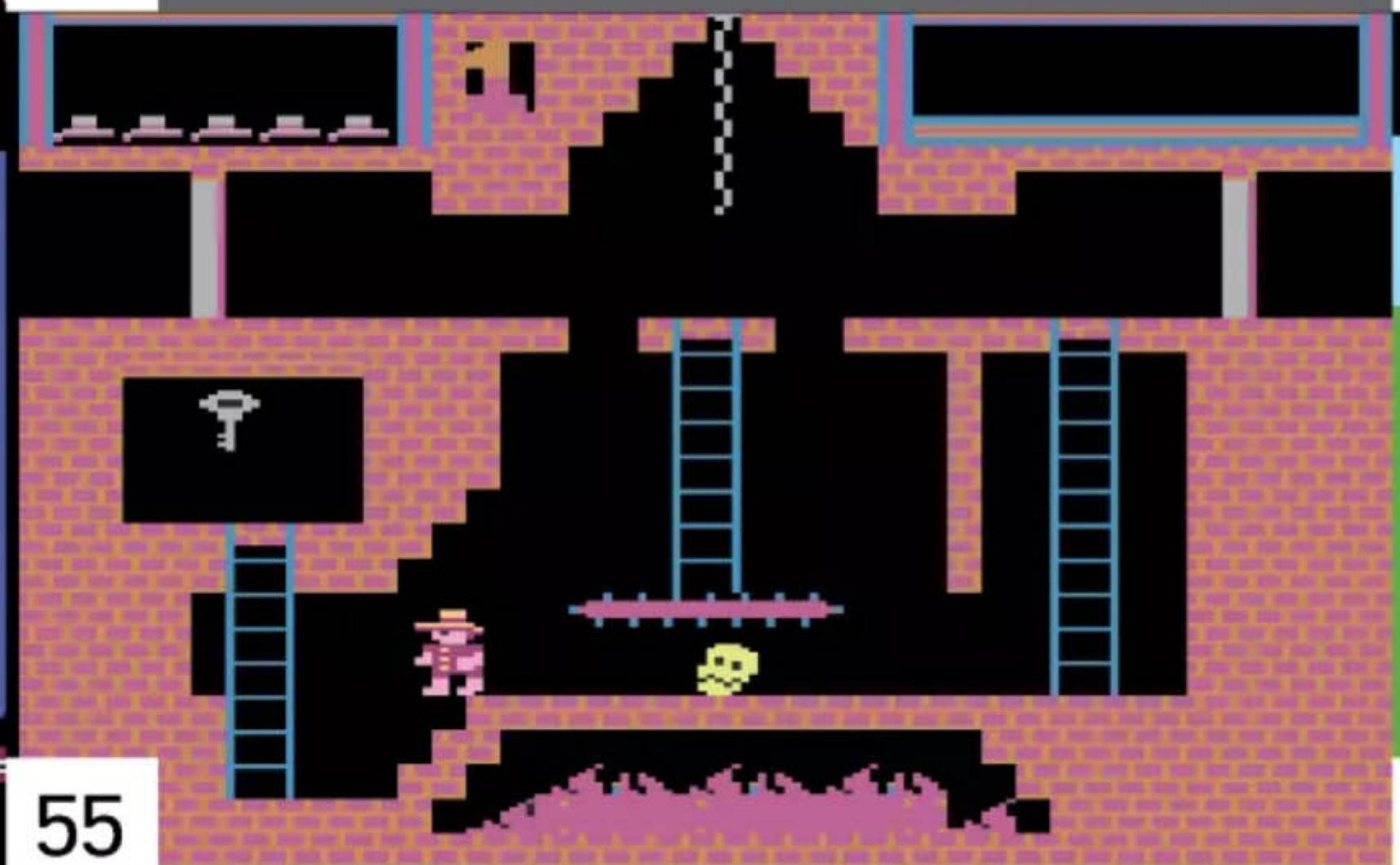

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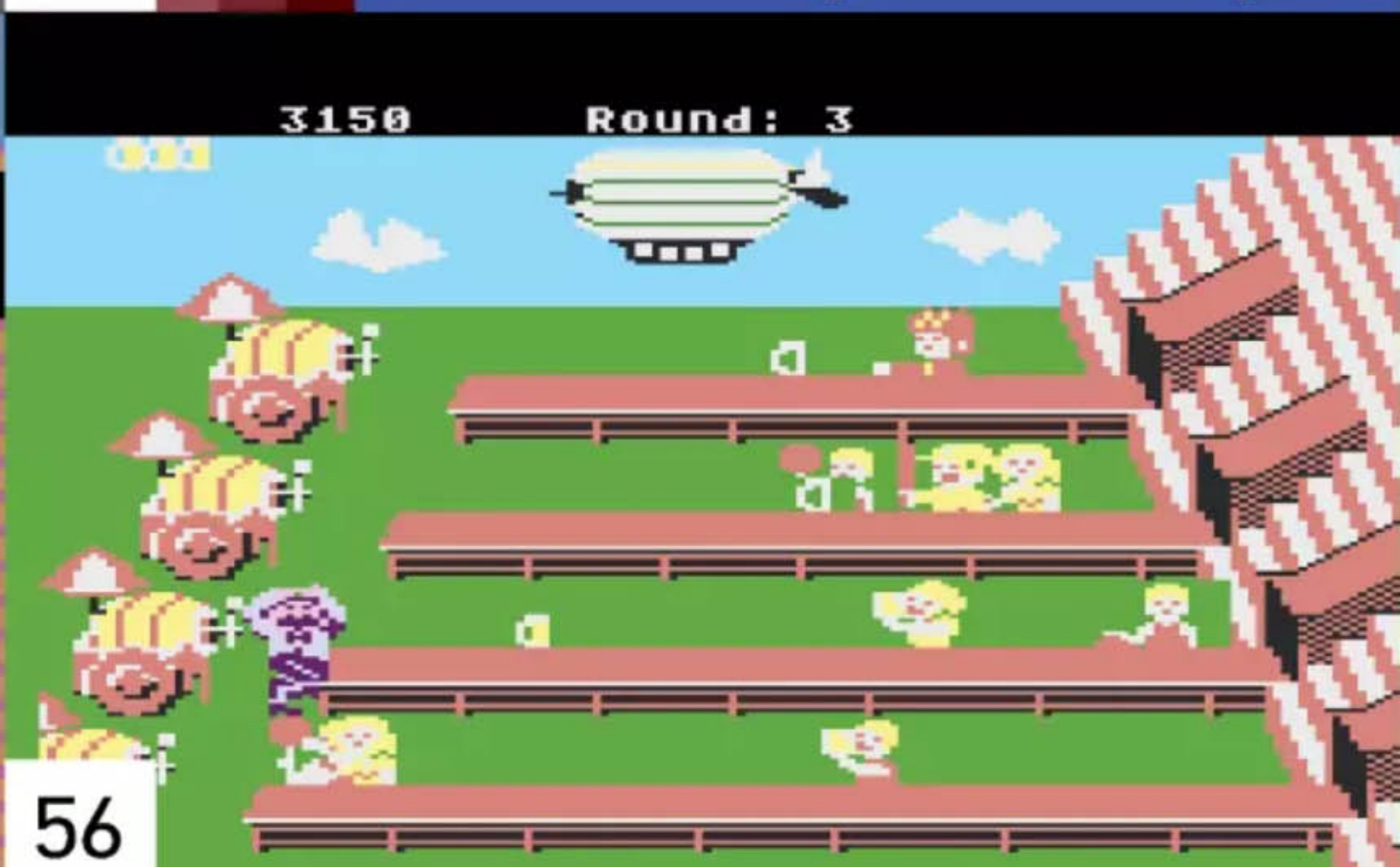

3150 Round: 3

56

ATARI 7800

THE ATARI 7800, ONCE THOUGHT OF AS THE SAVIOUR OF ATARI, WAS A VICTIM OF POOR TIMING. MARTIN GOLDBERG REVEALS HOW IT MEANT TO LAUNCH THE NEXT GENERATION OF 8-BIT CONSOLES, BUT ULTIMATELY BECAME AN 'ALSO-RAN' IN THE POST-CRASH ERA

The company responsible for the 7800's internals, General Consumer Corporation (GCC), had first come to the attention of Atari in June of 1981. *Missile Command* had been very popular on campus, until some obsessive students began scoring too well on the game. In typical smart guy hacker fashion, and long before today's common console mod kits, three MIT students decided to modify the arcade game to make it harder. Feeling a sense of entrepreneurial drive, they came up with the idea of making a standard kit out of it and selling it, giving arcade operators the ability to breathe new life into their ageing *Missile Command* machines in the form of new gameplay items and difficulty settings, which greatly added to the longevity. So that June they started advertising, and by July Atari was already launching a lawsuit and, by August, a restraining order.

Most companies would have folded right there, but not GCC. They were MIT students, after all, and had a strong sense of being smarter than the average guy. Their defence against Atari's suit would be just another interesting puzzle or challenge – things that are entertaining to them. After going several rounds with GCC in federal court, realising that it may be better to tap the talent pool at GCC than squash it, Atari's parent Warner worked out a deal in 1982 in exchange for dropping the lawsuit: GCC would design games for Atari. Atari was forced to drop its lawsuit but did so with prejudice, becoming a reluctant contractor to a company that it was trying to shut down. The now-classic games *Quantum* and *Food Fight* were a result of this deal, as were several games for Atari's 2600 system. During that time, having designed a *Pac-Man* modification kit called *Crazy Otto*, GCC approached Bally/Midway with a bluff on the possibility of letting it officially release the game. The bluff was that it had won its lawsuit with Atari – and it worked beyond its wildest expectations. Midway was actually interested in seeing *Crazy Otto* developed into a full sequel to *Pac-Man*, and so *Ms Pac-Man* was born.

Money to spend

By the end of 1983, flush with cash from its growing coin-op and consumer videogame design business, GCC took on its most ambitious project yet: designing a home videogame and computing system.

With no experience in chip, console or computer design, but full of bravado from the company's successes, several GCC employees flew out to California to take a month-long crash course in VLSI (very large scale integration) chip design. The goal was to be able to design the custom chip needed to drive the company's new project, codenamed Spring. Jokingly named after the MIT 'Pre-Spring Fling' dance, it was intended to be a modular computer, IBM-compatible, and have graphics and sound capabilities to rival any upcoming computers or consoles. As former GCC employee Steve Golson put it in a 1994 interview, "Spring was going to be a home computer/game-playing machine to beat them all".

Shortly before the design and layout process, Atari had come out with its 'high-end' gaming system, the Atari 5200. GCC paid attention to how it played out, and in the fashion that had become typical of the company, thought that it could do better. "So we get one of these things, they sent it out to us, and we saw they screwed up. They screwed up in so many ways," Steve Golson also noted. Besides the controller issue and poor game library, most notably missing from the 5200 was 2600 backwards compatibility. It had been advertised the past June at the Consumer Electronics Show, but now was nowhere to be seen. Meanwhile the ColecoVision had come out, which offered full 2600 compatibility via an expansion peripheral. GCC needed an alternative. As Steve Golson put it: "We're the smart guys on the East Coast, and we're just going to save their butts." And GCC was going to have Atari release it whether it wanted it or not, because Warner superseded all of the management then at Atari.

The pitch was for a 2600-compatible system that included souped-up graphics capability by the addition of more hardware-based sprites. This evolved into a 2600-compatible system based on the advanced graphics chip being designed for Spring.

Spring's graphics system concept was based around building up scan lines and display lists rather

POWER
PAUSE

"THEY SCREWED UP IN SO MANY WAYS"
STEVE GOLSON ON THE ATARI 5200

> “THE SPECS FOR THE MARIA GIVEN TO ATARI WERE IMPRESSIVE TO SAY THE LEAST: 320X240 RESOLUTION, A PALETTE OF 256 COLOURS WITH 25 AVAILABLE PER SCAN LINE, AND SOFTWARE-BASED SPRITE GENERATION AND COLLISION DETECTION”
>
> EARLY SPECIFICATIONS FOR THE 7800

ATARI
7800
SELECT
RESET
CROSSBOW
COMMANDO
DESERT
SUPER HUEY

than bitmaps, using a process similar to Atari's 8-bit computer line and even to the 2600. For the new console, GCC thought to use double-buffered display line RAM and DMA access, something unheard of for the time in a game console. The solution for the system's 2600 compatibility was to literally include the 2600's graphics and sound chip, the TIA, on the system's main board. The inclusion of the TIA chip influenced the name of the new chip brought over from Spring – or maybe it was the past experiences of these MIT college dropouts. Regardless, the team chose to name the chip MARIA, calling the full set on the new board TIA-MARIA after the popular Jamaican coffee liqueur. Going with Atari's now-standard approach of numbering its system names, the entire game console project itself would be called the Atari 3600.

> “WE'RE THE SMART GUYS ON THE EAST COAST, AND WE'RE JUST GOING TO SAVE THEIR BUTTS”
>
> STEVE GOLSON SPEAKS

Spec-tastic

The specs for the MARIA given to Atari were impressive to say the least: 320x240 resolution, a palette of 256 colours with 25 available per scan line, and software-based sprite generation and collision detection that could support upwards of 100 objects.

During this process, unbeknownst to GCC, the system would have its first competition with Nintendo. At the time, Nintendo had yet to release its Famicom system in Japan and was looking to find a worldwide OEM manufacturer and distributor in the guise of Atari. After a preliminary discussion between Atari's Ray Kassar and Nintendo's Minoru Arakawa and Howard Lincoln, negotiations began with Atari on 11 April when Nintendo demonstrated the prototype Famicom running an almost-complete *Donkey Kong* and Popeye. The offer was for Nintendo to provide 100,000 to 150,000 completely populated Famicom main boards for Atari to throw into its own consoles, all for 5,300 yen (at that time about $20) a piece. It was certainly an attractive offer, but Nintendo at this time was a nobody in the consumer market save for a few previous *Pong* console clones.

Because of the deal that Warner made with GCC, Atari was also committed to GCC's 3600 console and had to take time to evaluate the strength and weaknesses of both. GCC's MARIA chip design had started on 1 April and wouldn't be done until 1 July. The Atari project managers familiar with the MARIA specs felt that it was a superior system to the Famicom, however some of the Atari engineers appeared to be leaning towards the Famicom and strongly recommended going through with the deal. Atari wanted to stretch out negotiations until at least mid-July to have time to form a valid cross comparison and decide which one should form the internals of the 3600, but the fact that Nintendo had demanded a quick response on interest didn't help. Atari had no choice but to go through with committing to an interest or risk losing the console to a competitor. Over the next couple of months manufacturing and design considerations for the Atari version of the Famicom were discussed – including an adapter to play 2600 games. Several important meetings were held as well to hash out manufacturing and supply concerns, the last of which was at the June Consumer Electronics Show in Chicago. The deal, if successfully completed, would ultimately have Atari releasing a Nintendo-based console for that 1983 Christmas season and a total of 2 million units over the contractual period.

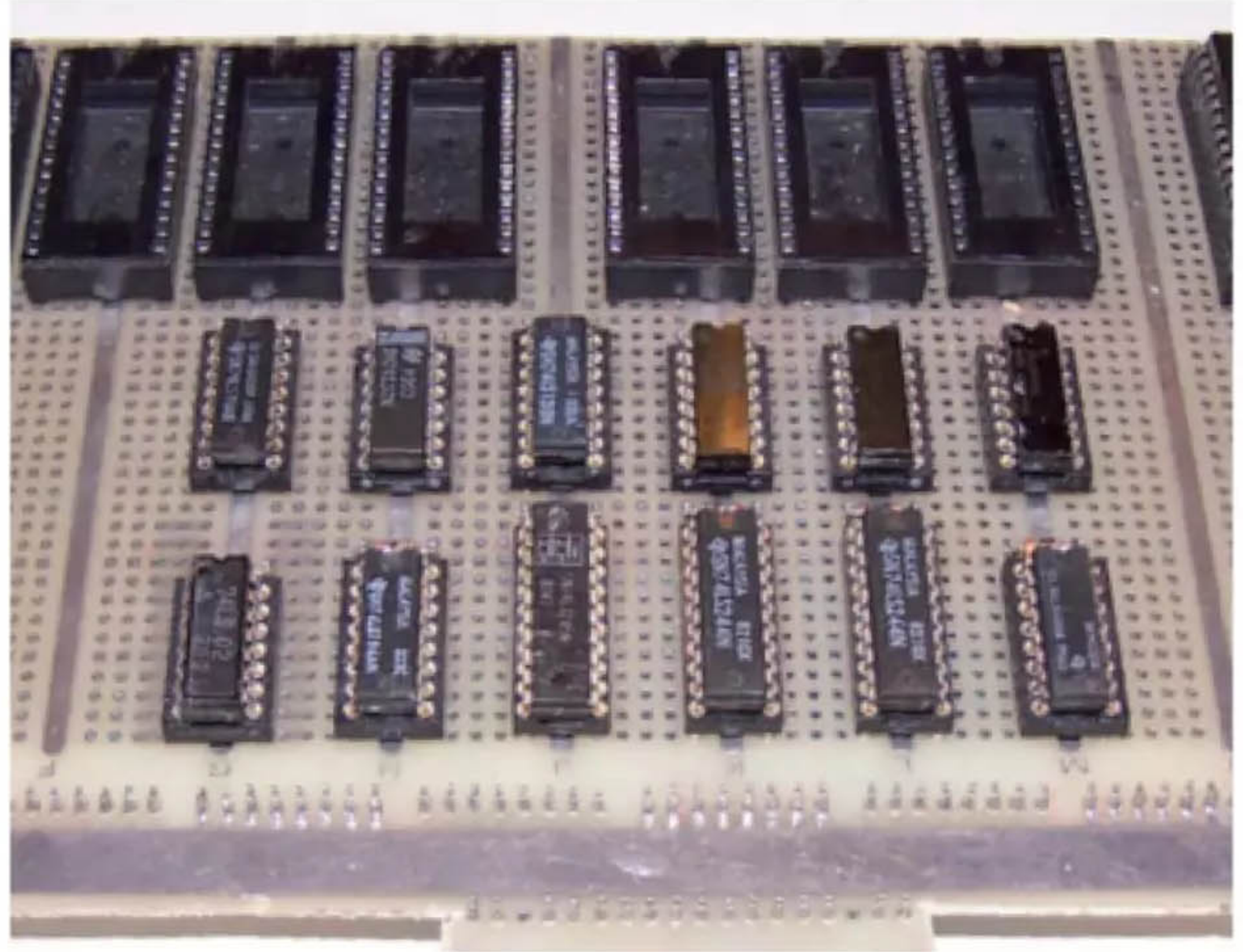
In the meantime, the first MARIA chip sample was returned on 1 July to GCC. Unfortunately, it found that it had a problem: the chip could display a ton of sprites, but had no time in the processor's cycles to move them. Hence the design on the MARIA 2 started, and was not completed until 17 September.

Unfortunately for Nintendo, however, by July Atari's now well-known financial problems were already in full swing. In conjunction with these problems and his stock-selling misconduct, Ray Kassar was out the door during that July. Jim Morgan was brought in right away to replace Kassar, but he wanted to take two months vacation before coming to head things up by that September. Any further talks stalled and ultimately gave GCC more time to finish the revision of the MARIA. By early September, Nintendo, Warner, and Coleco had a meeting with Warner to resolve any issues over *Donkey Kong's* licensing, and it was assumed that negotiations would continue again for Nintendo's Famicom deal.

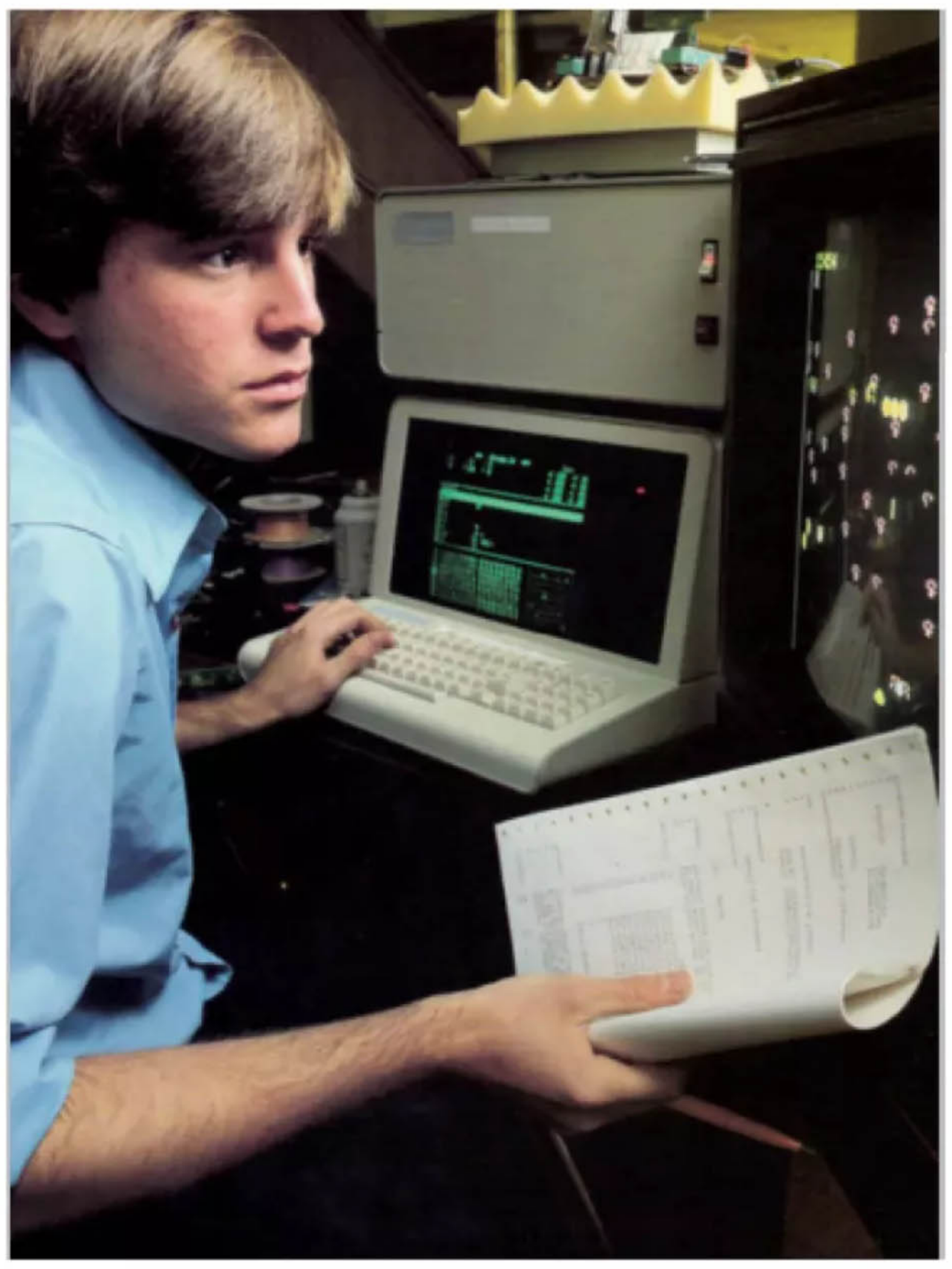
DATAFILE

YEAR RELEASED: 1984, 1986
ORIGINAL PRICE:
$150 (1984), $80 (1986)
BUY IT NOW FOR: $60+
ASSOCIATED MAGAZINES:
ATARI EXPLORER, ANTIC
WHY THE ATARI 7800 WAS GREAT...
IF YOU LOVED CLASSY ARCADE CONVERSIONS THEN THE 7800 WAS AN ESSENTIAL CONSOLE TO OWN. IT ALSO CONTINUES TO HAVE A THRIVING HOMEBREW SCENE

ATARI 7800 VIDEO GAME CARTRIDGE
DIG DUG
The Underground Arcade Chomping Game
SUPER GAME CARTRIDGE
ATARI 7800 VIDEO GAME CARTRIDGE
COMMANDO



» A prototype Atari 7800 developer board.



» In the process of programming the 7800's version of *Robotron*.

TOP-001610
I-001610
POW

» *Mario Bros.* One of three titles from the old Nintendo licence.

ATARI
POWER
PAUSE

"WHEN MORGAN CAME BACK, THE FIRST THING HE DID WAS FREEZE ALL PROJECTS FOR A MONTH"

ATARI AND NINTENDO PART WAYS

Unfortunately, when Morgan came back, the first thing he did was freeze all projects for a month. Realising that there would be no time for a Christmas release, and compounded by rumours from people leaving Atari that the company may not even have the money for the deal because of its financial problems, Nintendo was unwilling to spend any more time in limbo and decided to go it alone.

To expand or not expand

By that autumn, Morgan knew exactly what direction he wanted to take Atari in to save it and where GCC's project fit in the scheme of things. He threw Atari's full weight behind the 3600, issuing memos that it was to supersede all product development, including Atari's own ongoing console and computer projects. This was going to be Atari's flagship console and Morgan's saviour of the consumer game console division. The target was to produce a million units for the first year and an additional 3 to 4 million in the following years.

For Atari's part, it began with leveraging some of its previous design work. Atari's Barney Huang took the futuristic and sleek design profile of the 2800 and combined it with some of the high-end accoutrements of the 5200's case to form the 3600's outer shell. The 3600's controllers were taken from the 2600 Jr project, a highly cost-reduced version of Atari's flagship 2600 then in development.

The CX24 'Super Controllers', as they were then called, were designed in a similar wedge shape to the 5200's controller, including side-mounted fire buttons on both sides. A design decision intended to alleviate a common complaint of the original 2600 joysticks by left-handed players – Atari's original solution was to show how to open up the sticks and flip the PCB around to support holding it 'lefty' – GCC would then be able to utilise the extra button for more play options. Atari and GCC also worked out a solution to a problem facing both the 2600 and 5200: anyone could code and release games for them, no licensing required, because of a previous lawsuit between Atari and Activision. This had opened up a flood of low-quality games for the console, something that Atari didn't want to see on its new system. The solution was a unique and encrypted digital signature contained on all cartridges, that when not present would automatically lock the system into 2600 mode.

GCC, meanwhile, began working on some key expandability features that it wanted the 3600 to have, some of which were also influenced by its original vision for Spring. First and foremost was the computer/keyboard expansion. Everything would centre on a unique keyboard and cartridge combination that would leverage Atari's existing computer peripherals via a built-in Atari Serial I/O (SIO) port and add 16K of RAM to the system's standard 4K.

The keyboard itself would be a fully functional keyboard comparable to those already used in Atari's XL line of computers, and would plug in to joystick port 2. GCC also designed an expansion port to further support its growth as a computer, with things like additional RAM expansions and a futuristic LaserDisc interface. Atari 3600-specific versions of Atari Basic and Atari's VideoWriter word processor were also developed to be bundled with the expansion, and VideoWriter was even expanded to allow joystick or trackball control for selecting and manipulating text. The computer expansion would give the buyer the ability to turn their console into a legitimate 8-bit computer comparable to Atari's existing low-end Atari 600XL.

GCC also realised that with the evolution to true arcade-quality graphics, other features such as high score saves would aslo need to be supported in the new machine. To this end, it developed a high score expansion that plugged in to the cartridge port and would store the top five scores of 65 games. Upon plugging in the expansion cartridge, the player could immediately add their own name.

If that wasn't enough, it was even smart enough to tell your difficulty settings and have separate score charts for each setting on a game.

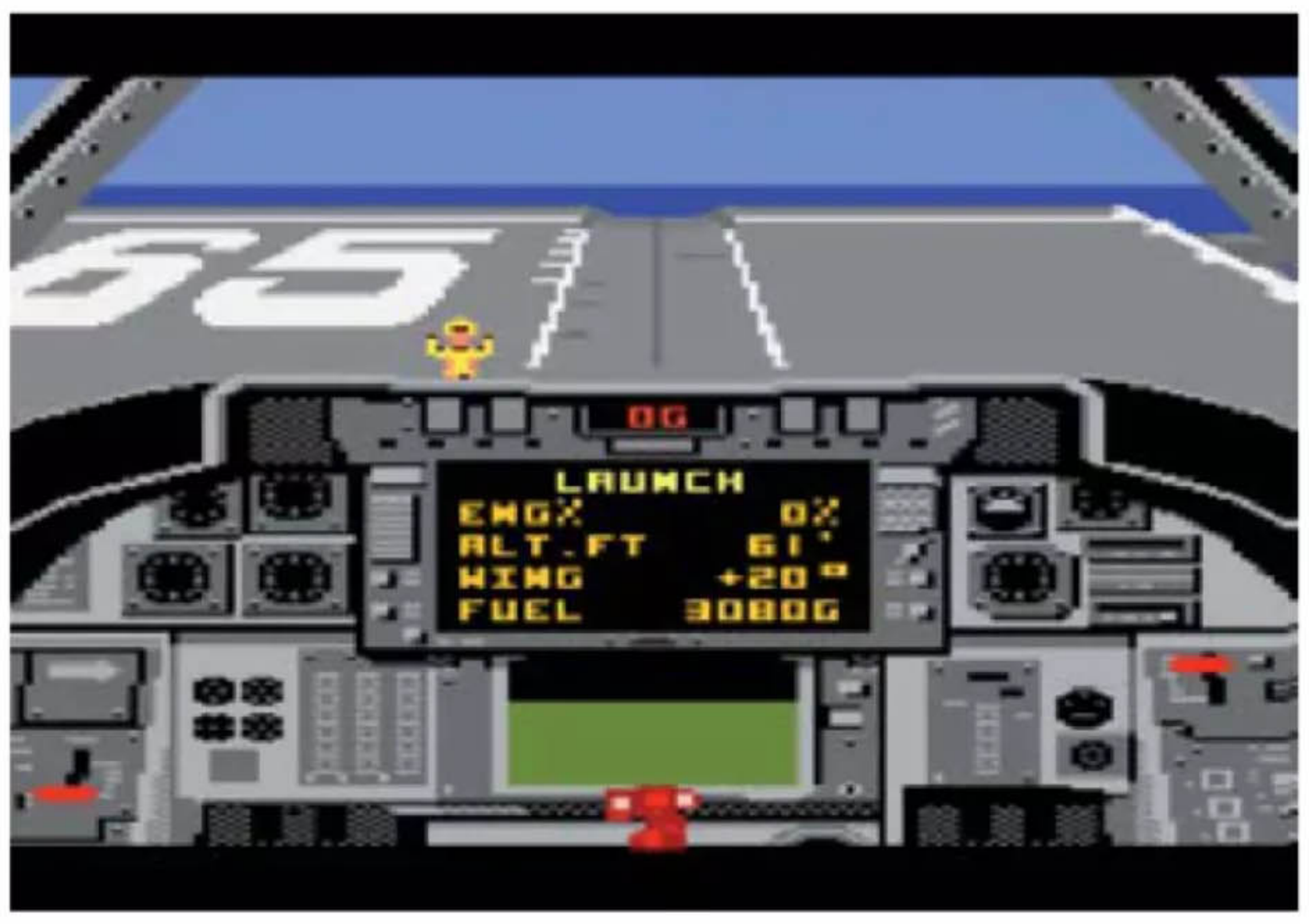
A funny thing happened during the months leading up to the introduction of the 3600 in May of 1984: the US videogame industry's crash began hitting its crescendo. Throughout 1983, Atari's financial problems had begun not only to become a rallying cry on the lack of investor confidence across the industry, but it showed some serious changes beginning to ripple through the market. By early 1984, both game publishers and console manufacturers were regularly announcing layoffs and closures. Atari itself suffered $539 million in losses and laid off over a third of its 10,000 employees. By January, Morgan had succeeded in eliminating 40 per cent of Atari's overhead, feeling that it was "inexcusable for a company that sells a billion dollars worth of goods not to make a profit". The overhead cuts were just the beginning, though, as Morgan sought to completely reorganise Atari's consumer division. First, he sought to improve the company's reliability image by not announcing a single product that wasn't already ready to ship, and second to cut dead weight and focus on a few profitable videogame and computer products. Morgan's new mantra for Atari was: "We're in the business of enhancing people's lives through interactive electronics." It was a view reminiscent of Atari's original 'Innovative Leisure' logo.

> "A TOTAL OF 14 TITLES WERE ANNOUNCED BETWEEN MAY AND JUNE"
>
> ATARI GETS BUSY

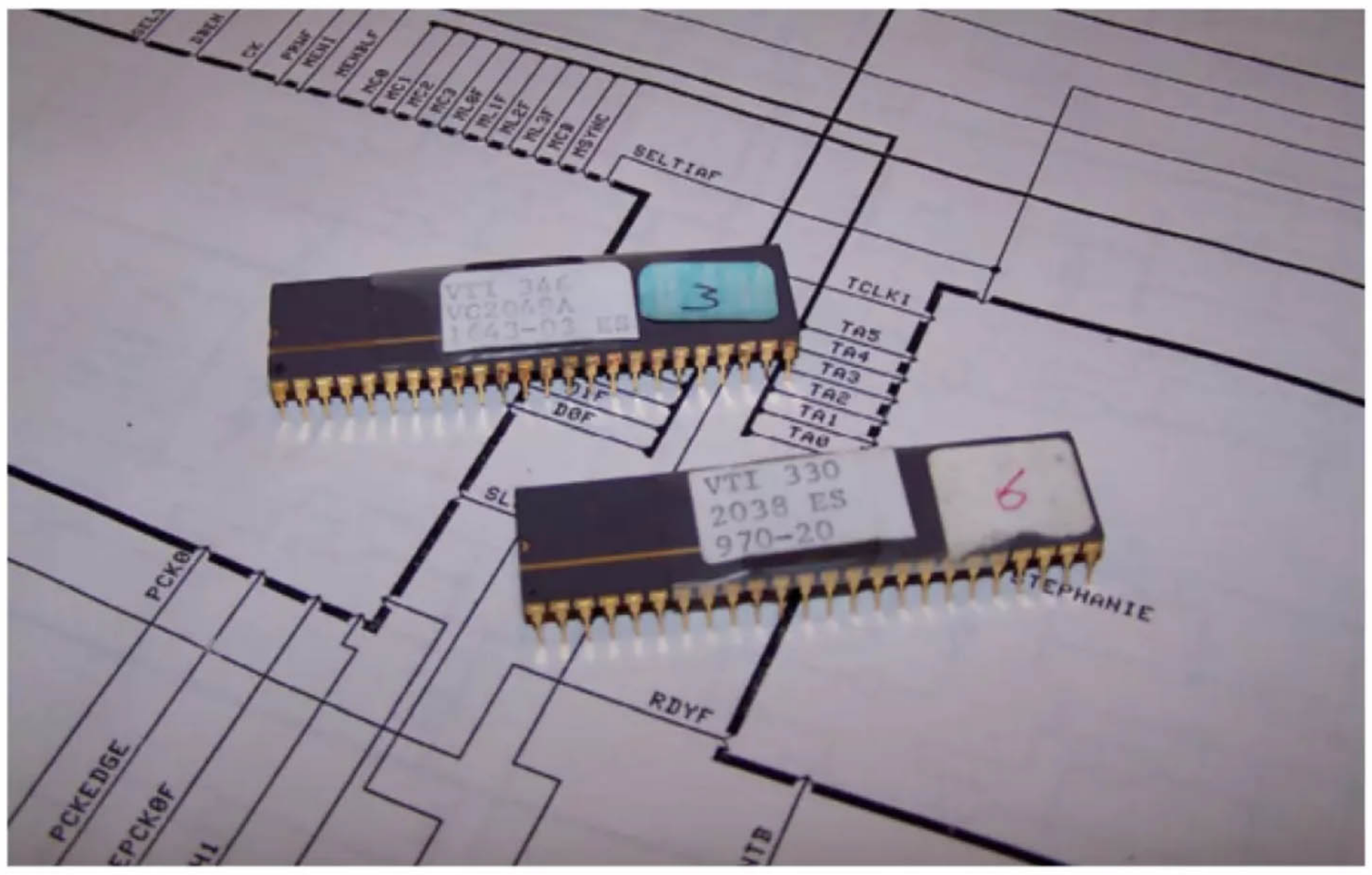
Casualties of war

Under this new plan, the 5200 was the first casualty, with manufacturing halted that January. Sales of the 2600 were actually up 40 per cent on original forecasts, and with the eventual release of the 2600 Jr the overhead on those would be cut drastically. With the 3600 now firmly poised to be the new flagship console, it would have to venture into choppy waters – but it would do so with a new name. The 3600 designation was considered too low for a top-of-the-line console in its current number scheme, and it was decided to go with 7800 to denote 5200-style advanced graphics and 2600 backwards compatibility: 5200 + 2600 = 7800. By the time of its official introduction on 21 May 1984, its title was fully expanded to the 'Atari 7800 ProSystem', and its controllers were now referred to as Proline controllers. A total of 14 titles were announced between May and June: *Ms Pac-Man*, *Pole Position II*, *Centipede*, *3D Asteroids*, *Joust*, *Dig Dug*, *Desert Falcon*, *Robotron*, *Galaga*, *Xevious*, *Food Fight*, *Ballblazer*, *Rescue On Fractulus!*, and *Track And Field*. Learning from its error of using *Super Breakout* as the pack-in title for the 5200's launch, Atari would be including *Pole Position II* as the pack-in for the summer launch. By September, it was to be built in to the 7800 itself, further adding to the console's appeal.

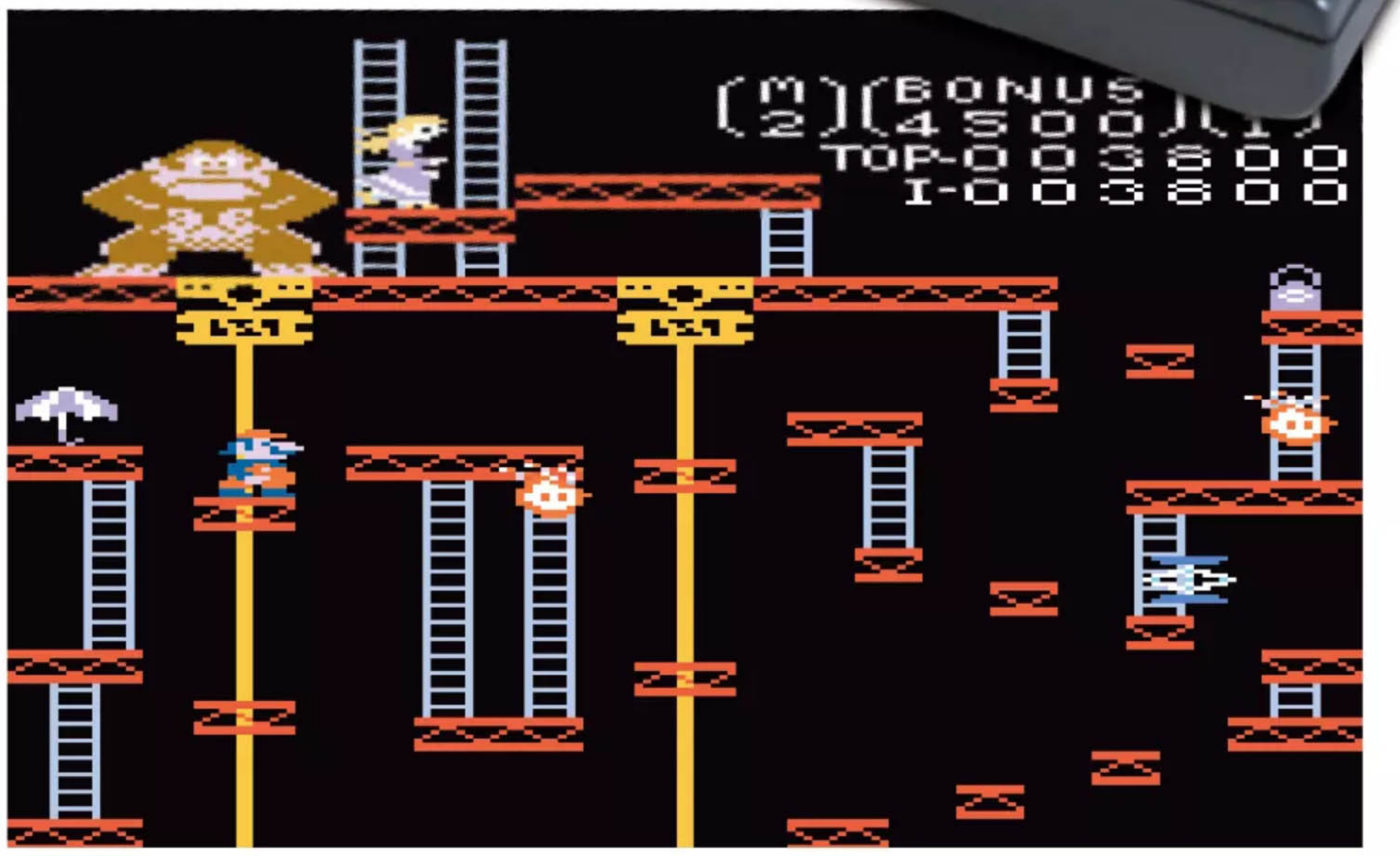
Unfortunately, the 7800 was met with mixed opinions, many of which questioned Atari's wisdom in releasing a new console in that climate. Atari's financial problems were producing almost daily news coverage, and it was also no secret that Warner had been looking to dump the faltering Atari on someone else. Many news sources pondered on the likelihood of this console having any real impact as a saviour of the company. Likewise, the selection of titles was considered unflattering and already old, since many of the titles had already been released on other platforms, so they weren't as exciting to customers. Undaunted, however, Atari had a very successful test run in New York in June, but it was to be a short-lived success for the company. By 2 July it was announced that Atari's consumer division had finally been sold. The buyer was former Commodore head Jack Tramiel.



» *Tomcat*, the F-14 fighter simulator was a decent release



» GCC's MARIA chips, designed for the 7800.



» The Atari 7800 had some slick arcade conversions like *Donkey Kong*.

COMMUNITY

1. Atari Museum

www.atarimuseum.com

The Atari Museum, home base of the Atari Historical Society, is the premier Atari historical information and archive site. Run by noted Atari historian Curt Vendel, the site houses information and exclusive material not found anywhere else thanks to Vendel's close ties to former Atari employees. It's a superb site.

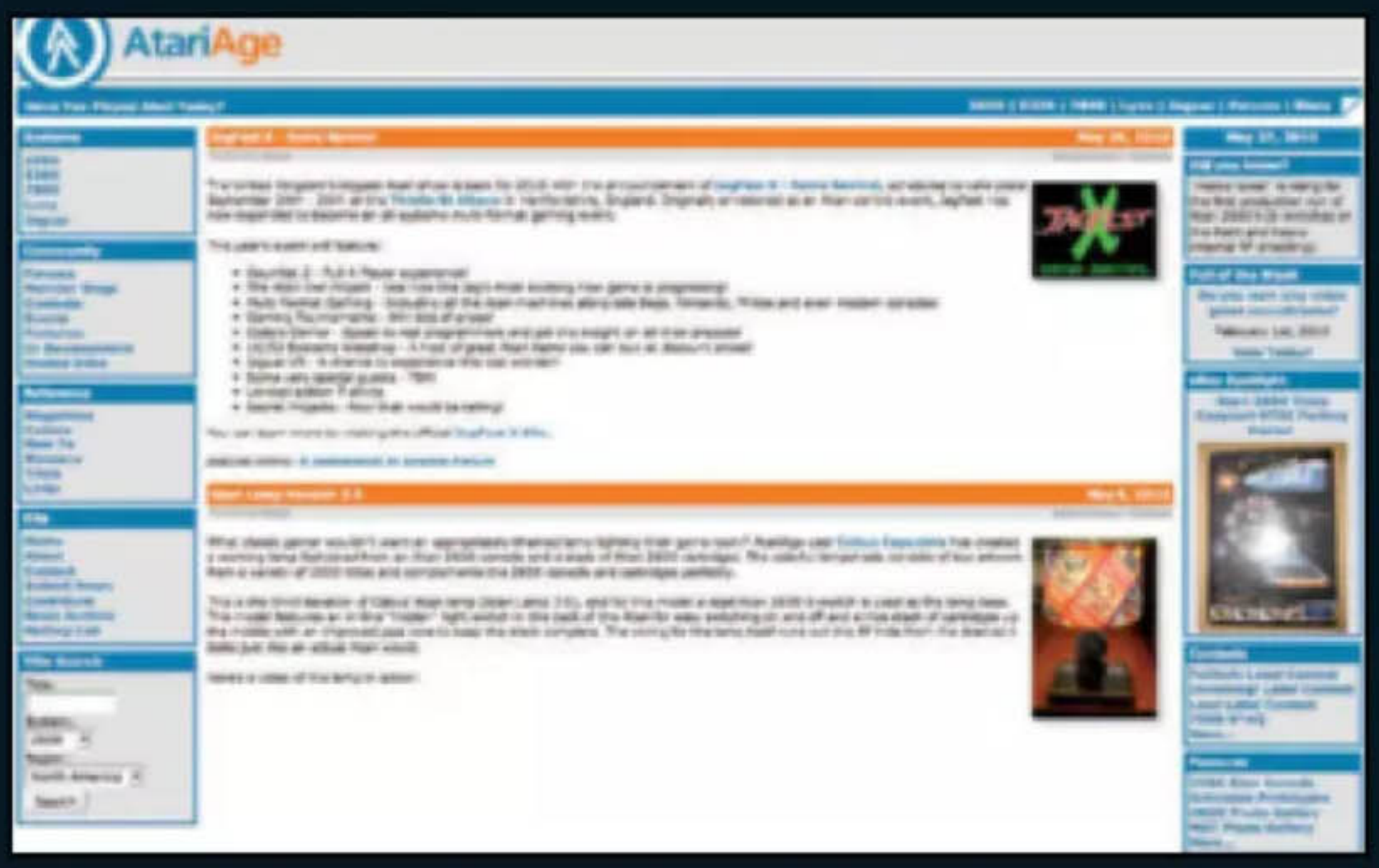
ATARI
www.atarimuseum.com

Play your video games on your PC/Mac/Linux computer in style:

2. AtariAge

www.atariage.com

If you want to find the current fan base of the 7800, you'll find it at AtariAge's bristling online community. The de facto community site for the Atari scene, you'll also find a store that supports current 7800 homebrew authors with full packaged releases of their games.



3. The Atari 7800 Page

www.atari7800.org

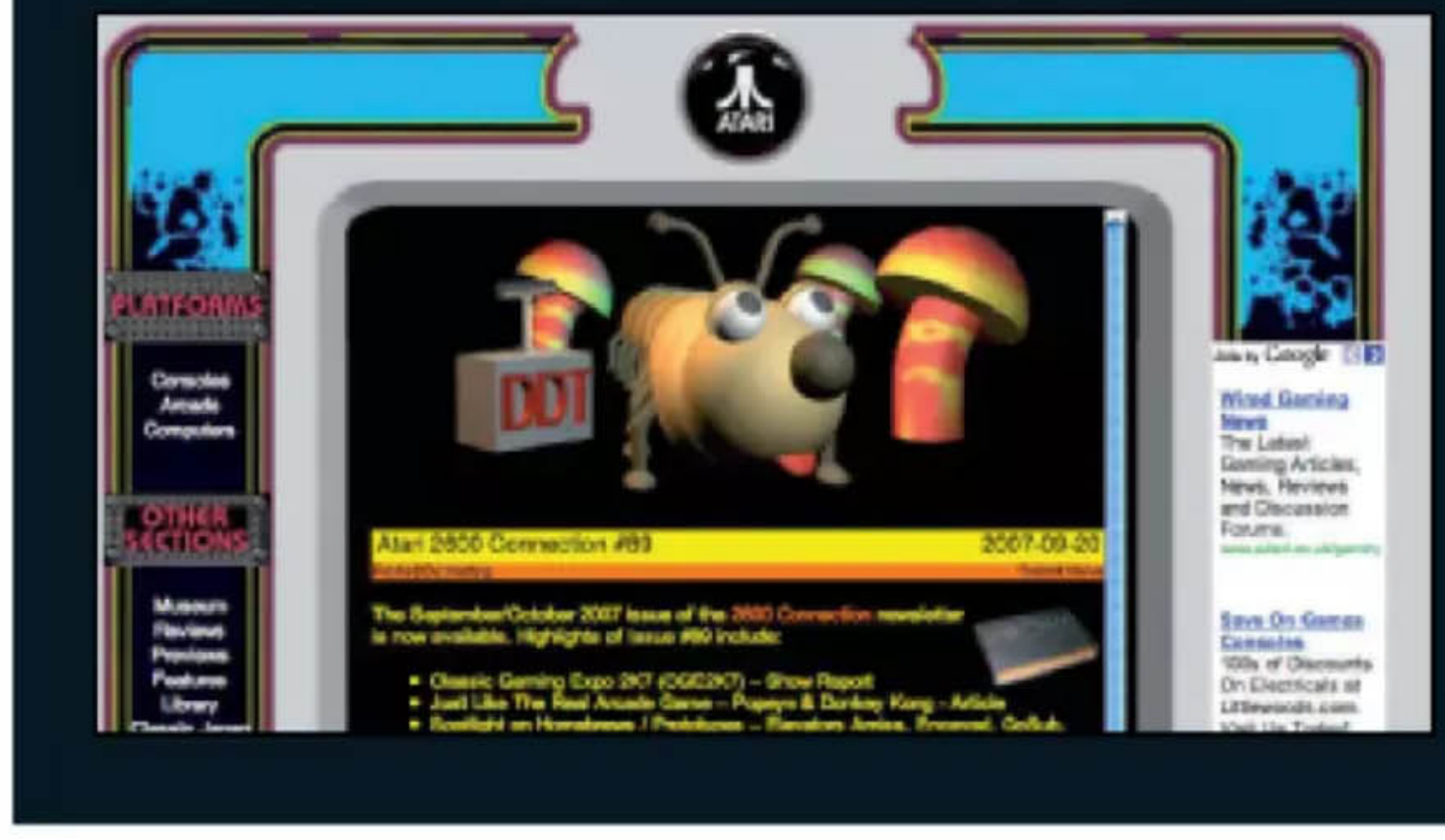
Don't let the minimalist design fool you. The site is chock full of great 7800 information. Featuring reviews, technical documents, projects, photos of the original press kits and more, this site is a true gem.

The Atari 7800 Page
atari7800.org

4. Dan B's Atari 7800 Tech Page

www.atarihq.com/danb/a7800.shtml

Besides the previously mentioned AtariAge, if you're interested in developing your own 7800 games then this is the place to start. A legend in the classic videogame homebrew hardware and software scene, Dan Boris's page focuses on all the technical information and tools that you'll need to get started.



To say things were a mess after the purchase was an understatement. Tramiel had purchased Atari Consumer for its brand name, manufacturing, distribution network, and current line-up of products. These were going to keep his new company, Atari Corporation, afloat while he worked on his next-generation computer. However, because ownership of patents, licences and products were now split between the coin-operated division – now called Atari Games – and Warner itself, it became a nightmare of litigation over the next several years. The 7800 was the first casualty of this, with Warner actually owning the console. GCC still hadn't been paid for the MARIA chip nor the launch titles that it programmed, and Warner wanted Tramiel to pay for it. Tramiel wanted Warner to pay and felt that it should have been part of the original deal, his anger apparent when an impatient employee started trying to put pressure on him to continue with the planned release of the 7800. He responded by throwing the system off his desk, firing said employee not long after. The 7800 remained in limbo until May 1985, when Tramiel finally relented and sent GCC its payment. He then began negotiating for payment on the original launch titles, which meant he had to begin looking for someone with experience in game consoles to start up a videogames division again.

That someone turned out to be Michael Katz, then head of top computer software company Epyx. Tramiel made it clear that he wanted Katz to bring back the 2600 via the cost-reduced 2600 Jr, relaunch the 7800, and develop some more timely games for it. Katz was on the job by early November, and by December they had introduced the 2600 Jr. That January at CES Atari was publicly announcing the relaunch of the 7800, and the original manufacturing run was out the door by the spring. Gone was the computer expansion and high score cartridge, however, but in place was a new-found sense of hope in the industry. In contrast to last time around, the 7800 was warmly received – as were Nintendo's NES and Sega's imminent Master System, as a sign of a reviving industry. By Christmas all three were head-to-head, but Nintendo was the clear winner by 1986.

End of the line

Where once licences were split between different platforms and a company may port titles to competing consoles, the market had changed. Much development in the arcades had switched to Japan, and with Nintendo's Famicom the clear market leader there, it had a lock on the latest titles. Publishers had to get a licence with Nintendo to release for the NES, which also barred the games from being released on other consoles. While the previous Atari had been at the top of the heap, its current form found itself with few options. Katz's solution was to use his old contacts in the computer industry to get licences to what he considered hot computer titles.

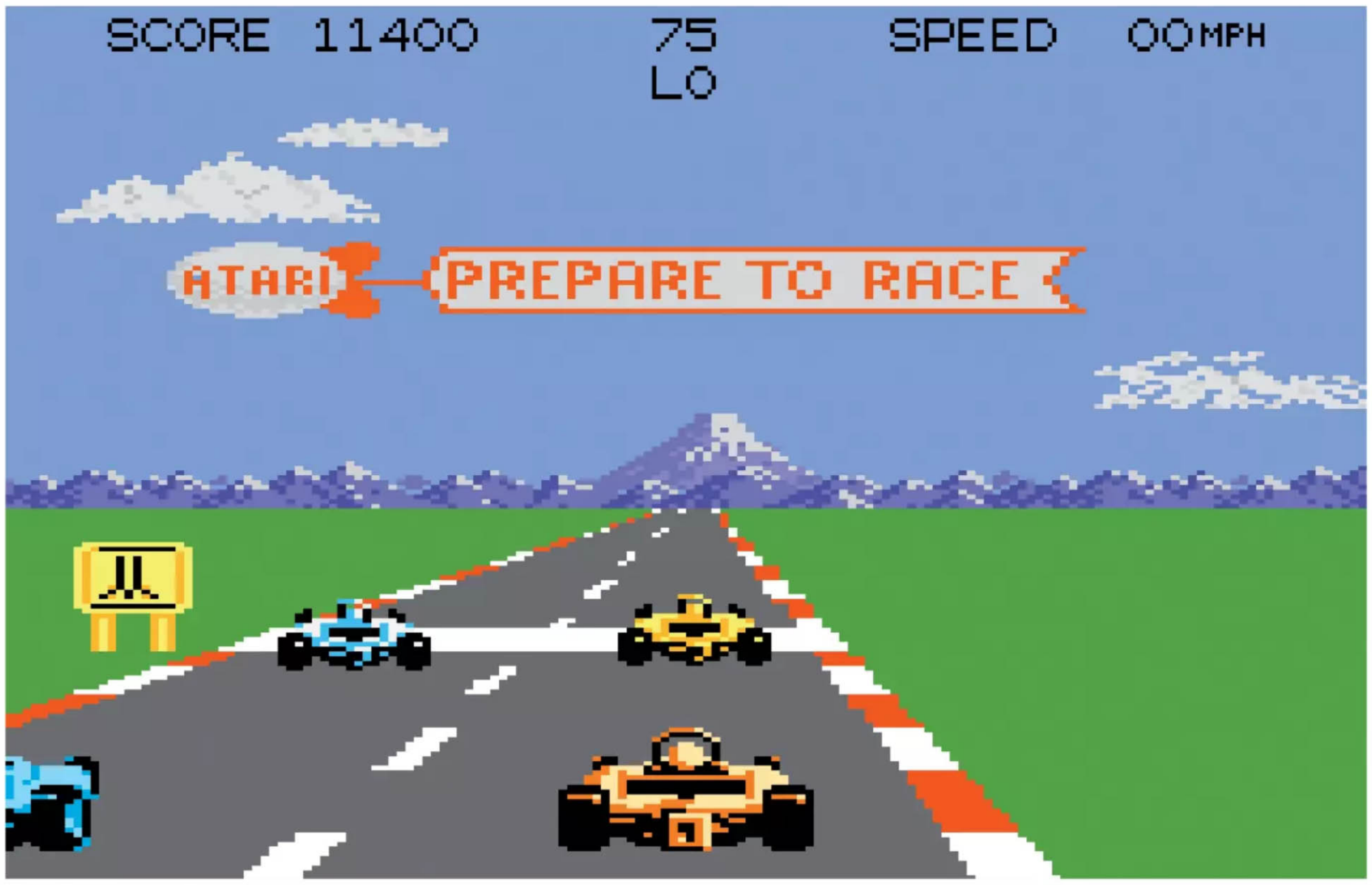
The worldwide launch occurred in 1987, and the PAL version of the 7800 ended up including the promised built-in *Asteroids*. Atari and Sega both sued Nintendo over its unfair lockout practices, but both ultimately lost due to poorly presented cases. As Katz put it: "Jack was too cheap to hire decent lawyers." With the switch to 16-bit consoles by the early Nineties, Atari shut down its entire legacy product line. By the time this announcement was made in January 1992, the 7800 had sold 3,772,751 units in the US alone during its lifetime. Sadly, though, it never reached its full envisioned potential.

ATARI
7800
SELECT
RESET
POWER
PAUSE

A special thanks to **atariage.com** for additional images.

ATARI 7800: PERFECT 10 GAMES

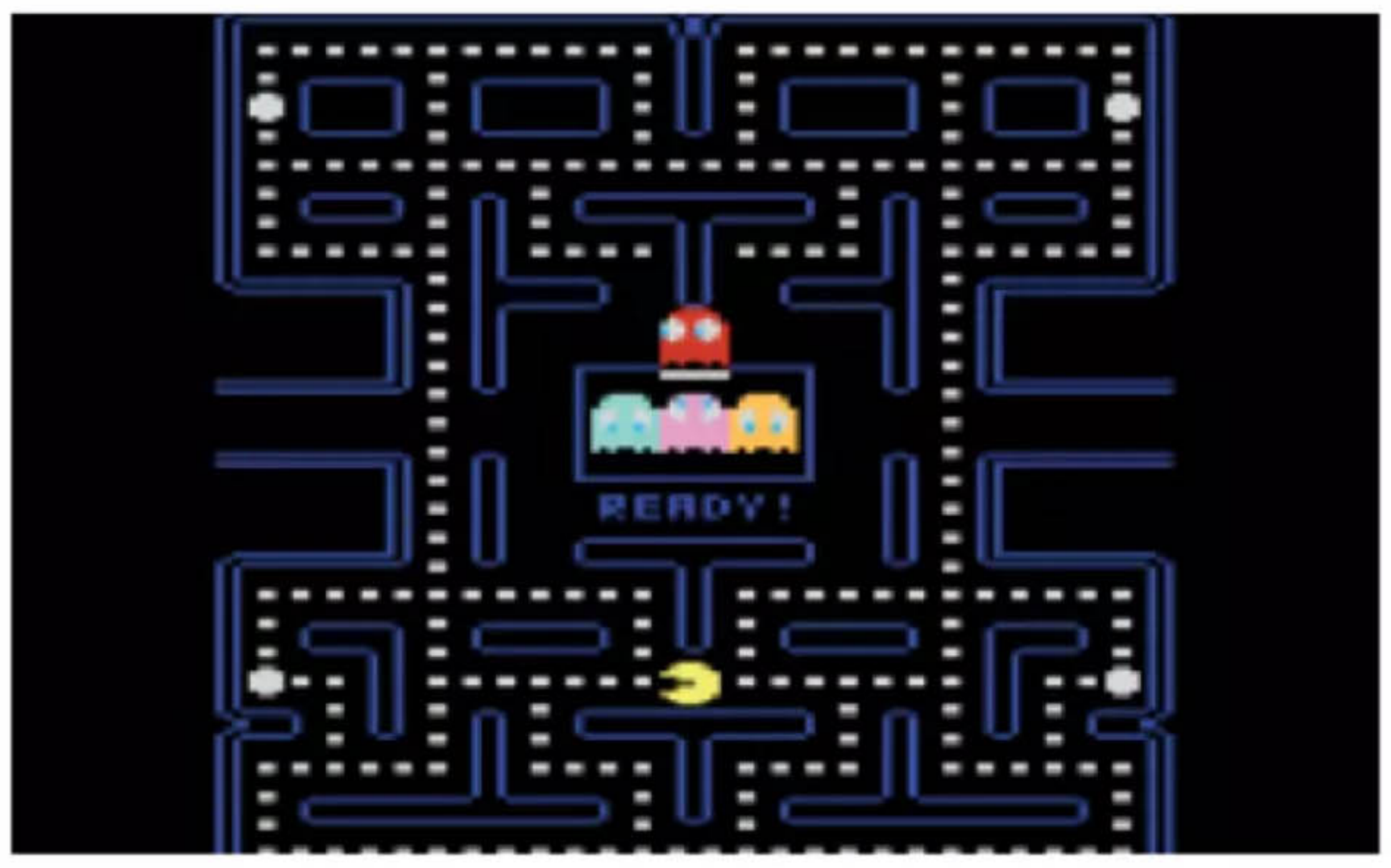
THE 7800'S CATALOGUE WASN'T EXACTLY BURSTING AT THE SEAMS, BUT IT NEVERTHELESS HAD PLENTY OF DESIRABLE TITLES ON IT, ESPECIALLY IF YOU LOVED ARCADE PORTS…



POLE POSITION II

» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

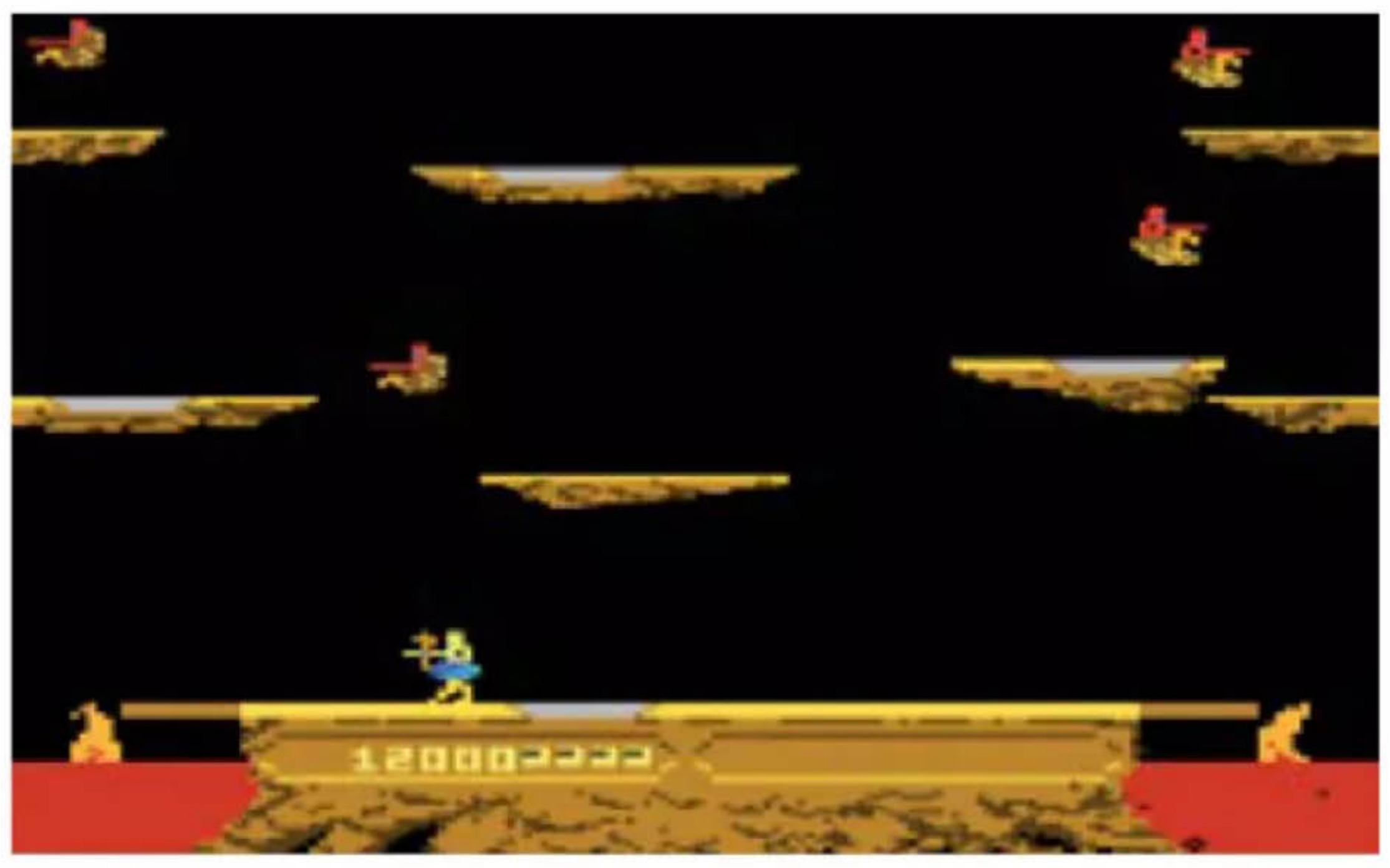
1 When it was first to be released as a pack-in in 1984, the Namco-authored and Atari-distributed *Pole Position II* was at its peak of popularity in the arcades and was a perfect introductory title to show off the system's capabilities against the likes of the ColecoVision's great port of *Turbo*. Exclusive to the Atari 7800, it's a faithful and fun port, save for the limitations of the 7800's 2600-based sound. Atari planned to allow its more-advanced POKEY sound chip to be included in cartridges to resolve this, but this game didn't get that treatment. Unfortunately, it suffered the same thing as the rest of the 7800's excellent arcade launch titles: by 1986 they were a bit outdated on the market.



PAC-MAN COLLECTION (HOMEBREW)

» RELEASED: 2006 » PUBLISHED BY: BOB DECRESCENZO » CREATED BY: IN-HOUSE

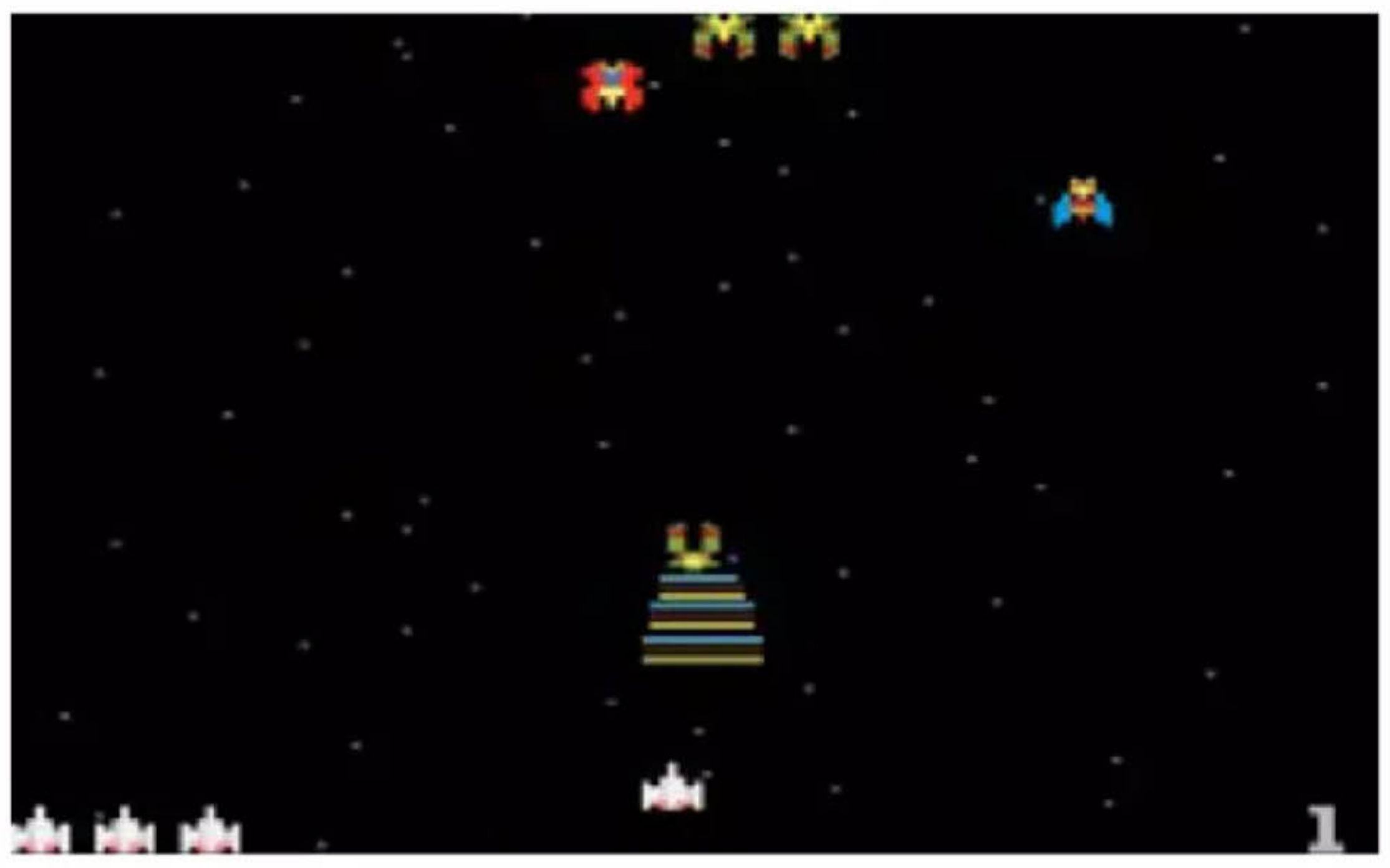
2 For years the special software for generating each cartridge's encrypted validation key was thought lost. Then, in 2001, an Atari ST computer with the original key generation program was found, allowing a 7800 homebrew game community to sprout up once it made it into the public domain. *Pac-Man Collection* is a direct result of this, and is a must-have for any 7800 collector. Featuring near-perfect arcade ports of the original *Pac-Man* and *Ms Pac-Man*, arcade hacks like *Hangly Man* and *Pac-Attack*, the multiple maze *Ultra Pac-Man*, and even components like random mazes. Stunning.



JOUST

» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

3 The 7800 received an almost-perfect port of the early Eighties arcade favourite *Joust*. Programmed by GCC, the creator of the 7800, it pulled no stops in delivering an extremely faithful port. Even closer than the NES's 1988 release – and without that platform's addition of cheesy music – everything is there, from the actual arcade-style title screen down to the accurate sounds. An excellent play, it was yet another strong 1984 launch title that would have added to the 7800's claims of being the best, most arcade-perfect console experience on the market. What a pity then that the console had such a short lifespan.



GALAGA

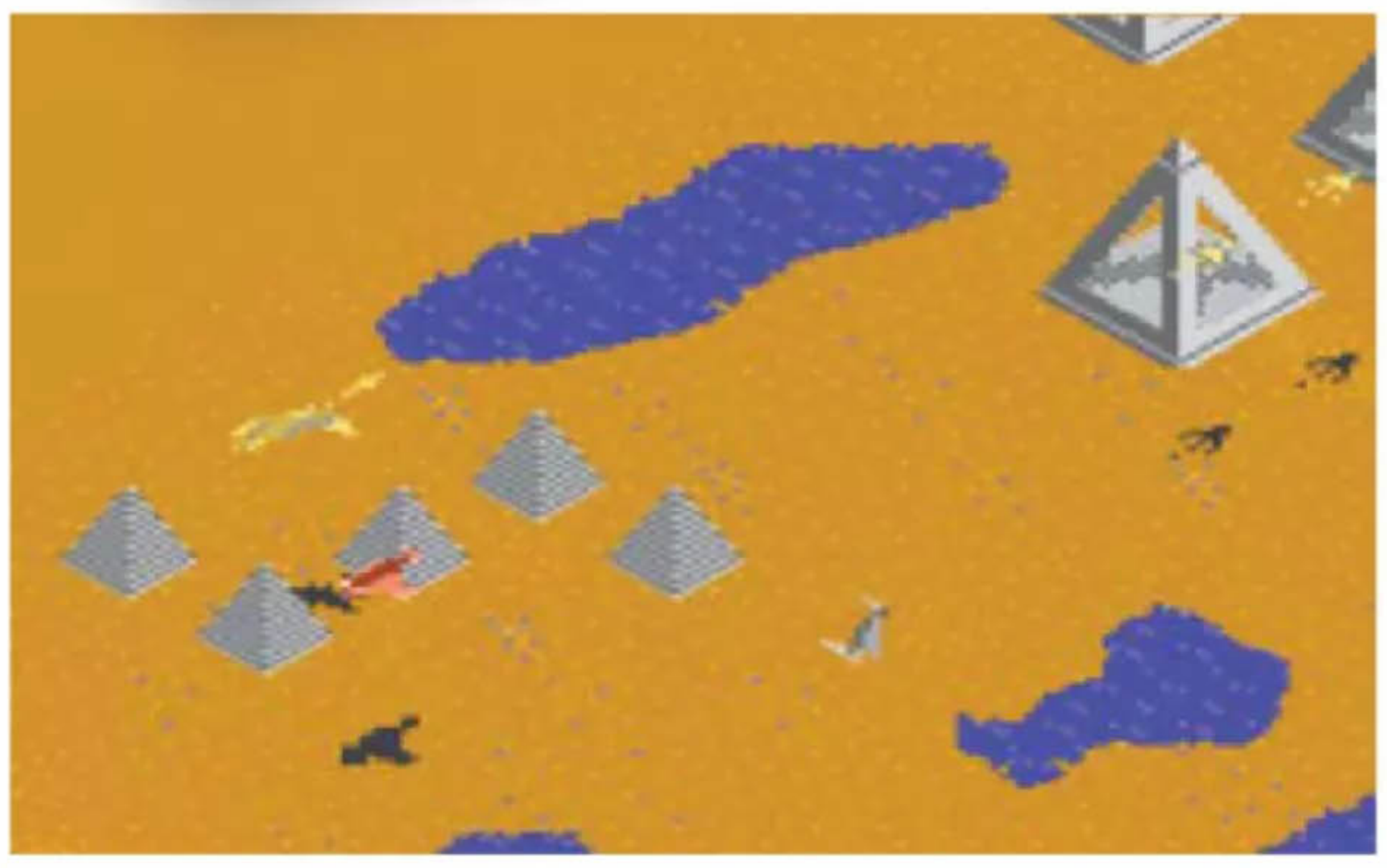
» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

4 *Galaga* received the same treatment by GCC to produce another great arcade port and impressive launch title. Unlike the later NES port, the 7800's version has a visibly smoother motion to the sprites and really shows off the system's much-lauded multi-sprite capabilities. Beyond that, it's a trade-off between the two ports. The 7800 reproduced more of the feel and layout of the arcade version, while the NES edition changes the aspect ratio and adds a title and score area off to the side, as well as including level counter icons missing from the 7800 version. Regardless, it's an excellent arcade conversion.

ATARI
7800
POWER
PAUSE
SELECT
RESET

> “DESERT FALCON IS ONE OF THE FEW PLANNED LAUNCH TITLES THAT WASN’T A PORT. IT’S AN ORIGINAL GAME”

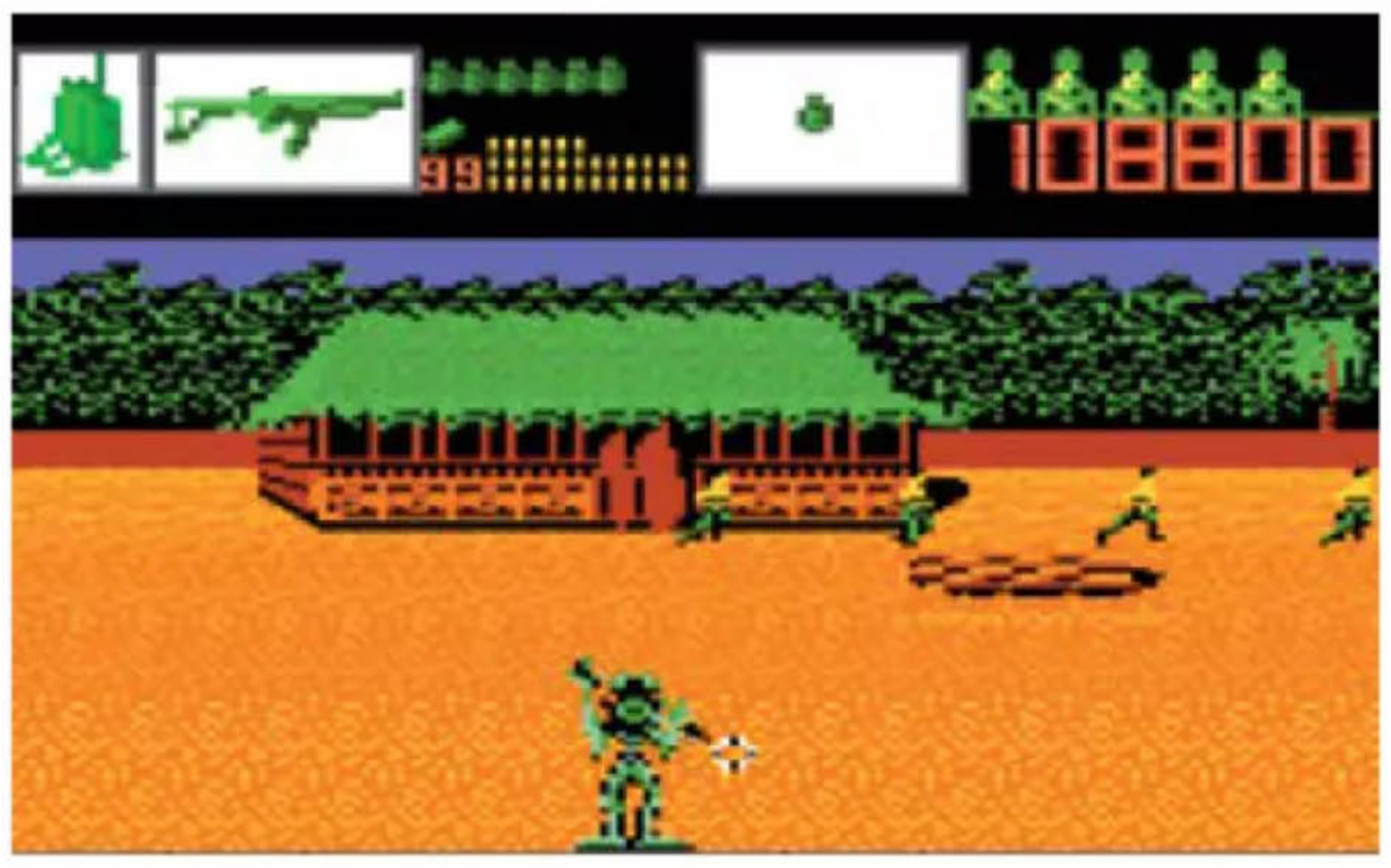
NOT EVERYTHING WAS AN ARCADE PORT…



DESERT FALCON

» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

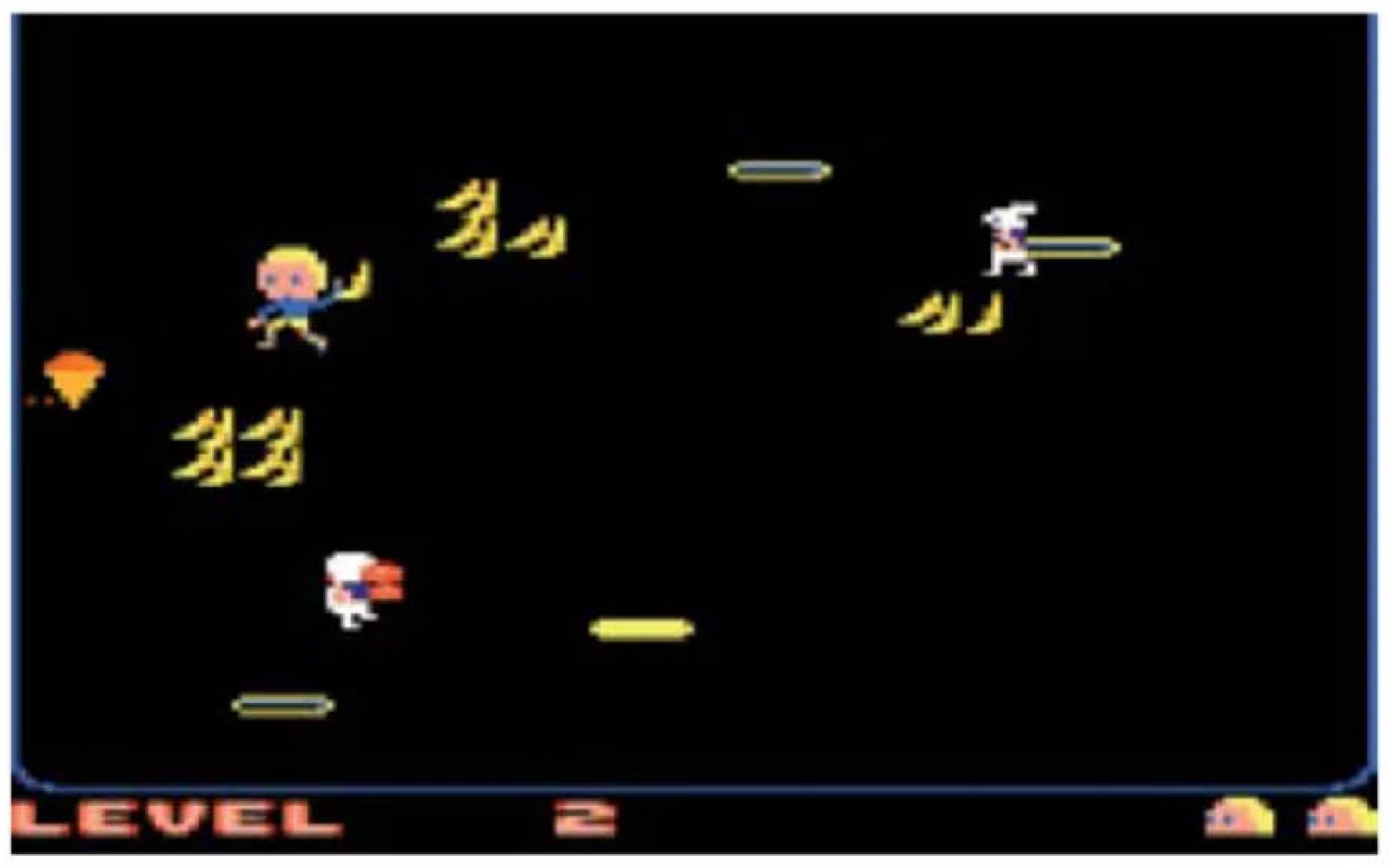
5 *Desert Falcon* is one of the few planned launch titles that wasn’t a port. It’s an original game, though done in a *Zaxxon*-style scrolling isometric format. Based around an Egyptian motif, you play a falcon that wants to fly about Egypt getting treasure and firing at bad guys. With the twist of being able to land and walk, it adds elements from another isometric arcade favourite, *Congo Bongo*. You can also collect various hieroglyphics to get power-ups, which vary depending on the combinations. You can’t go wrong with this game for your collection. All in all, a great early original title and a fantastic little shooter.



ALIEN BRIGADE

» RELEASED: 1990 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

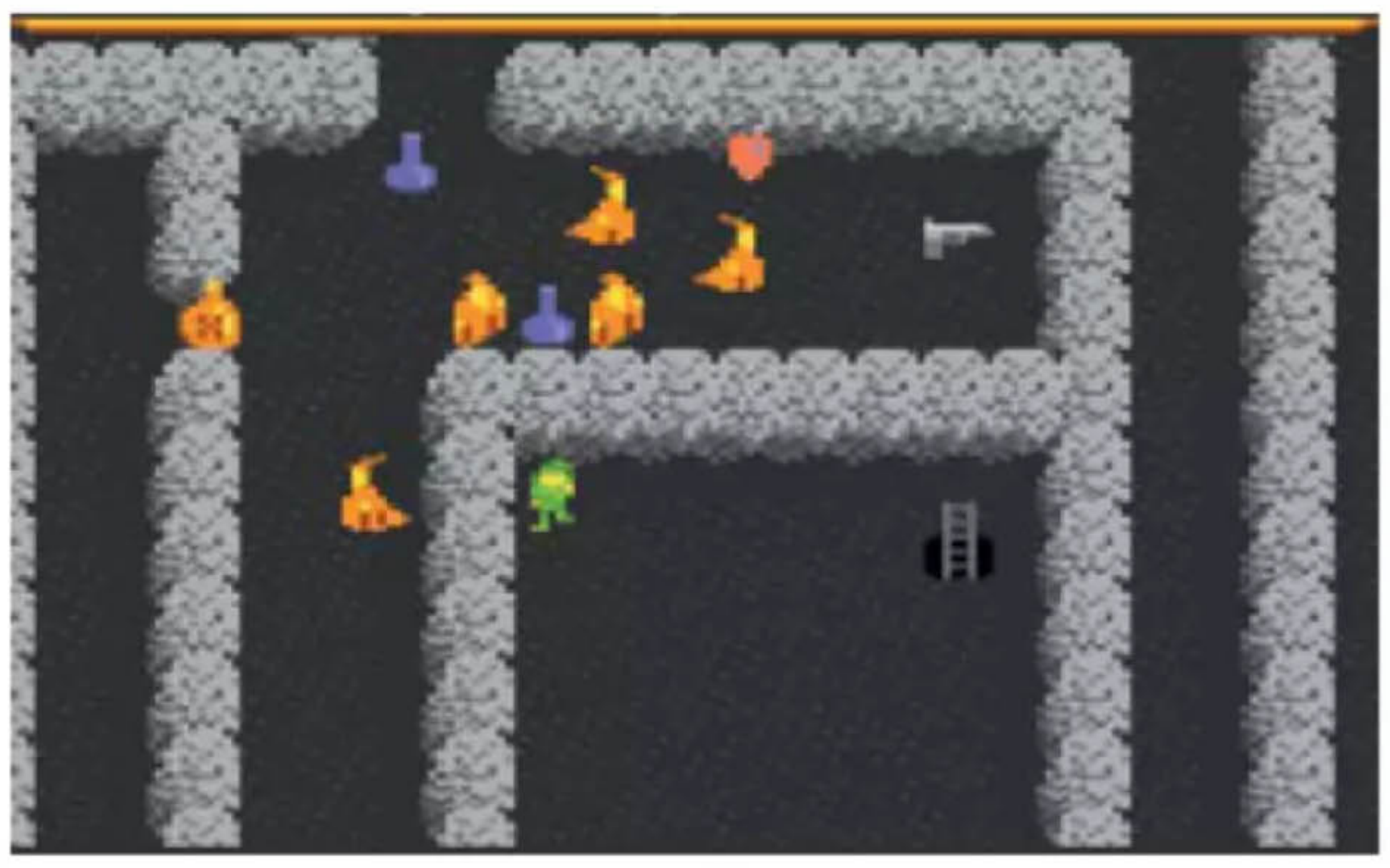
6 The Atari 7800’s answer to *Operation Wolf*, this game is actually hard to find because of its release late in the 7800’s lifetime. It’s one of only four lightgun games released for the 7800, and really a lot of fun to play. A sort of primordial plot version of Atari Games’ later *Area 51* release, you play a soldier battling aliens trying to take over the bodies of your fellow soldiers. Featuring higher-end graphics and gameplay, the game is also unique in that, at completion, it actually advertises – if not commands you to play – another game released at the time: *Planet Smashers*. Definitely worth seeking out.



FOOD FIGHT

» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

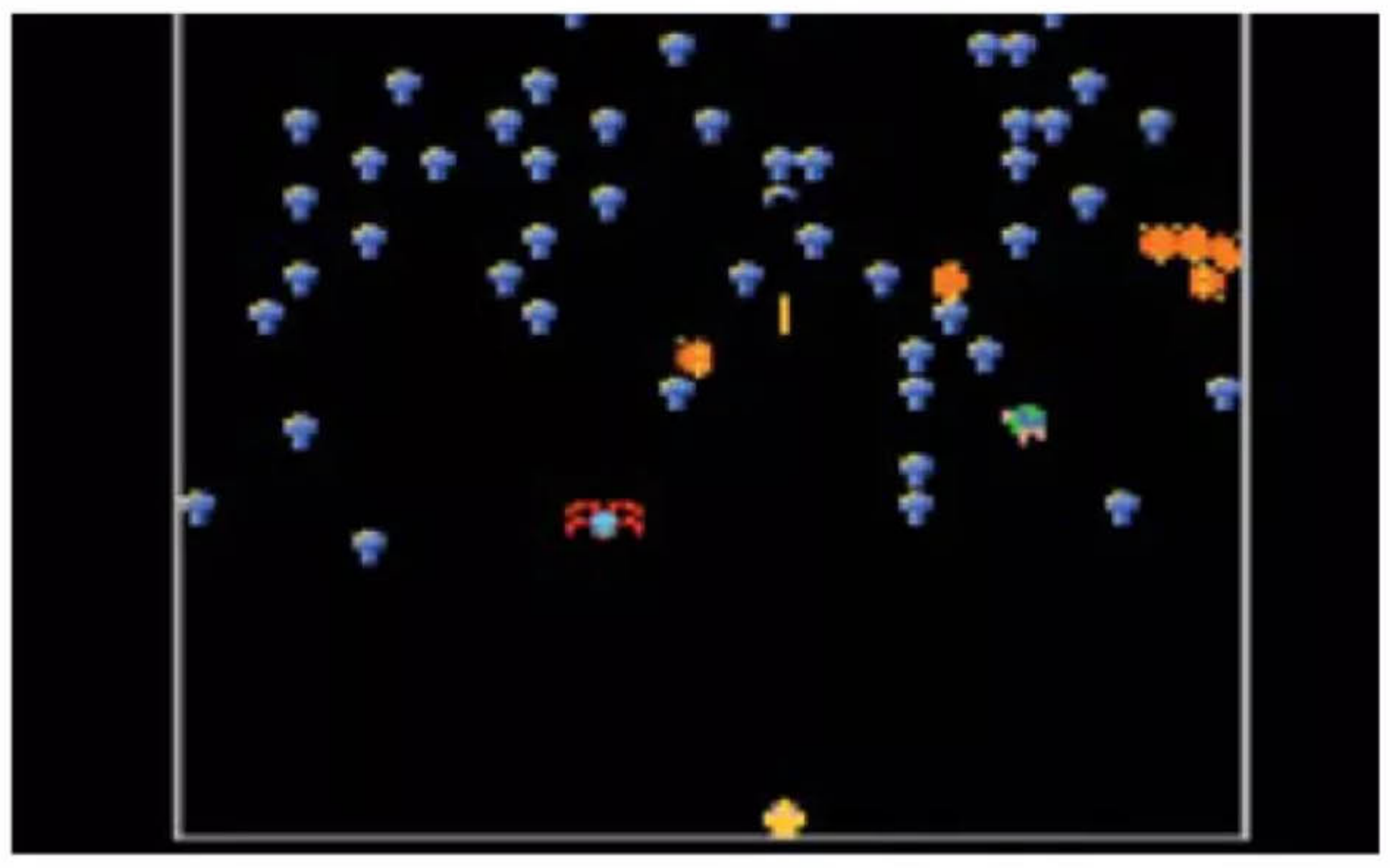
7 An excellent port of the arcade game that follows the fantasy of any kid who has seen the infamous food scene in Animal House, *Food Fight* lets you fight with food – *Robotron*-style. You play Charley Chuck, who instead of saving the human race is saving an ice cream from the perils of melting. Blocking your way are chefs hell bent on keeping you from your tasty treat, with your own source of protection being food that you can throw. Just as fast as *Robotron*, it shows off the 7800’s capability to faithfully reproduce arcade titles compared to the other consoles that were on the market at the time.



DARK CHAMBERS

» RELEASED: 1988 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

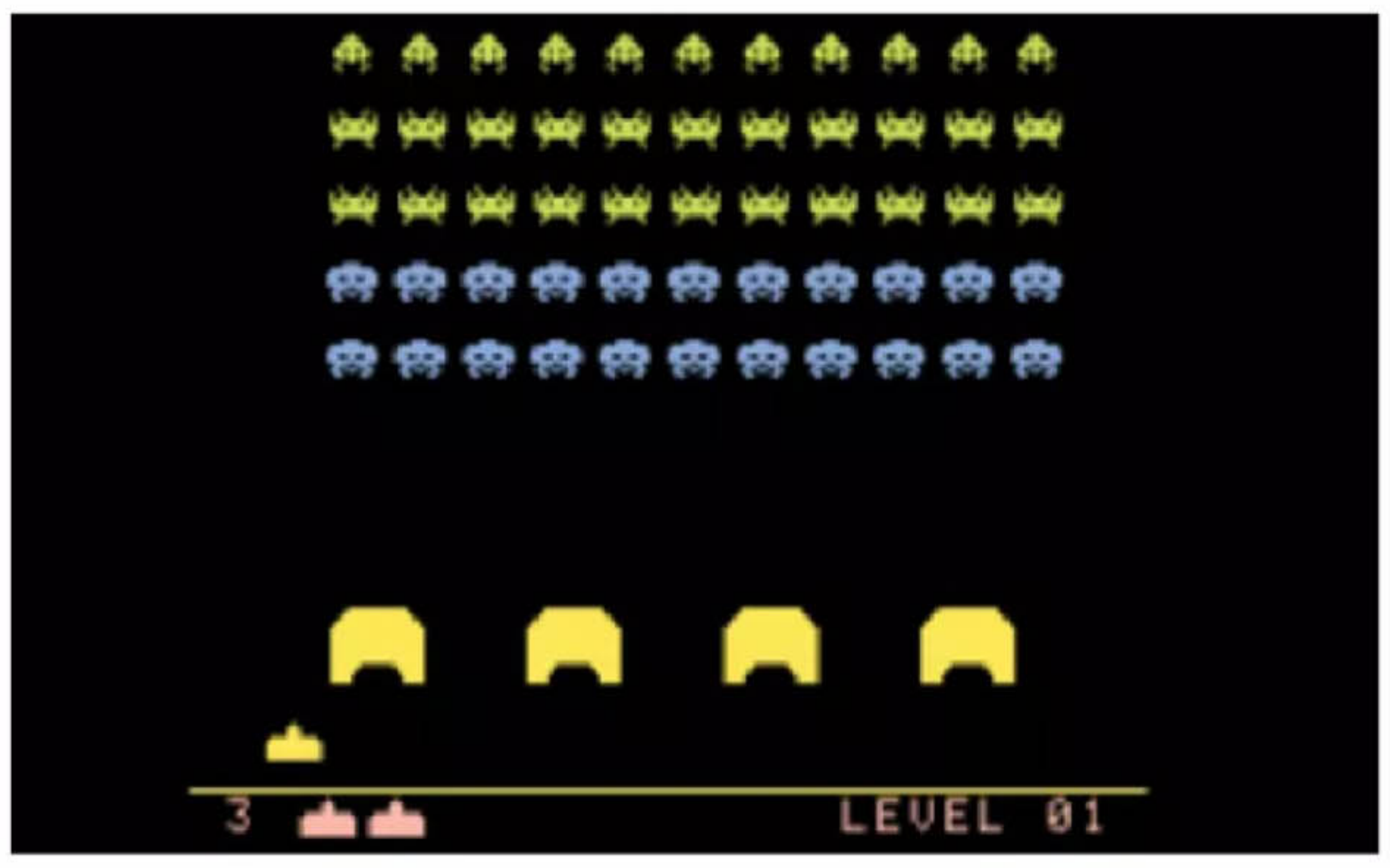
8 If *Dark Chambers* looks similar to Atari Games’ *Gauntlet*, that’s because it’s based on its ancestor *Dandy* by John Palevich. Originally released in 1983 through the Atari Program Exchange (APX), *Dandy* was taken without the author’s consent and morphed into *Gauntlet*. Palevich soon negotiated the rights to *Dandy* with Atari and continued its development on his own, but was never given credit in *Gauntlet*. However, the *Dandy* update *Dark Chambers* appeared on the 7800 and he was finally given full credit. And it’s just as fun to play as any of the previous versions! If you don’t believe us hunt down a copy and find out for yourself.



CENTIPEDE

» RELEASED: 1984 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

9 What can we say about *Centipede* that hasn’t already been said? It’s a classic arcade shooter that one would expect to see on an Atari console, and once again GCC did a near-perfect port. About the only thing lacking is, of course, a 7800 trackball, but the flawless motion and gameplay more than make up for the omission. This is the type of game that you think of when you think ‘lots of sprites’, and the 7800 handles them easily. Even the sounds are spot-on to the orginal arcade version. A superb launch title for 1984, it’s also one of the few timeless early 7800 games that still held up during its relaunch a couple of years later.



SPACE INVADERS (HOMEBREW)

» RELEASED: 2008 » PUBLISHED BY: BOB DECRESCENZO » CREATED BY: IN-HOUSE

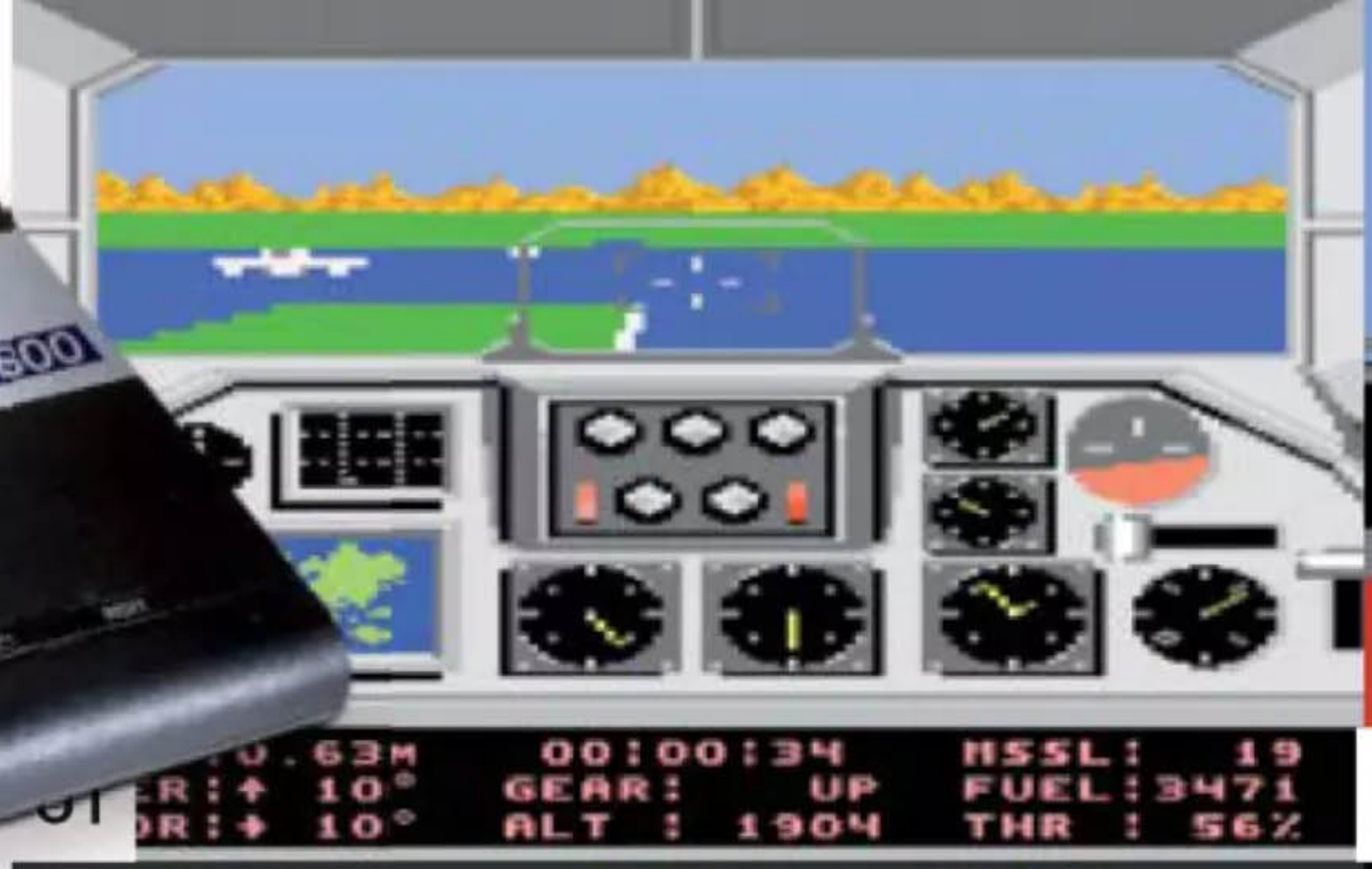
10 Unfortunately, if you wanted to play *Space Invaders* on your 7800 you were limited to the 2600 version. By 1986, Taito was already under lockout from Nintendo, whose Famicom got an updated port. While the 2600 version is respectable and still fun to play, it hardly takes advantage of the 7800’s more advanced capabilities. That situation was solved by homebrew author Bob DeCrescenzo, who also brought you the *Pac-Man* Collection. *Space Invaders* for the 7800 gives you an arcade-perfect port, right down to the overlay colouring schemes of the original.

ATARI 7800

AND THE REST...

Atari's 7800 was certainly short-lived, but it did manage to feature a solid array of arcade conversions. How many of the following titles have you played?

1 F-18 Hornet
2 Karateka
3 Motor Psycho
4 Crossbow
5 Pit Fighter
6 Basketbrawl
7 Rampage
8 Dark Chambers
9 Asteroids
10 Kung Fu Master
11 Fatal Run
12 Combat 1990
13 Mat Mania Challenge
14 Ninja Golf
15 Dig Dug
16 Joust
17 Donkey Kong
18 Super Huey
19 Fight Night
20 Impossible Mission
21 Pole Position II
22 Summer Games
23 Meltdown
24 Tower Toppler
25 GATO
26 Midnight Mutants
27 Choplifter
28 Desert Falcon
29 Planet Smashers
30 Sentinel
31 Klax
32 Robotron: 2084
33 Food Fight
34 Scrapyard Dog
35 Jinks
36 Ballblazer
37 Double Dragon
38 Ms Pac-Man
39 Galaga
40 Xenophobe
41 Donkey Kong Jr
42 Crack'ed
43 Mean 18 Ultimate Golf
44 Centipede
45 Ace of Aces
46 Commando
47 Mario Bros
48 Rescue on Fractalus!
49 Hat Trick
50 Missing In Action
51 Alien Brigade
52 Barnyard Blaster
53 Winter Games
54 Ikari Warriors
55 Xevious
56 Waterski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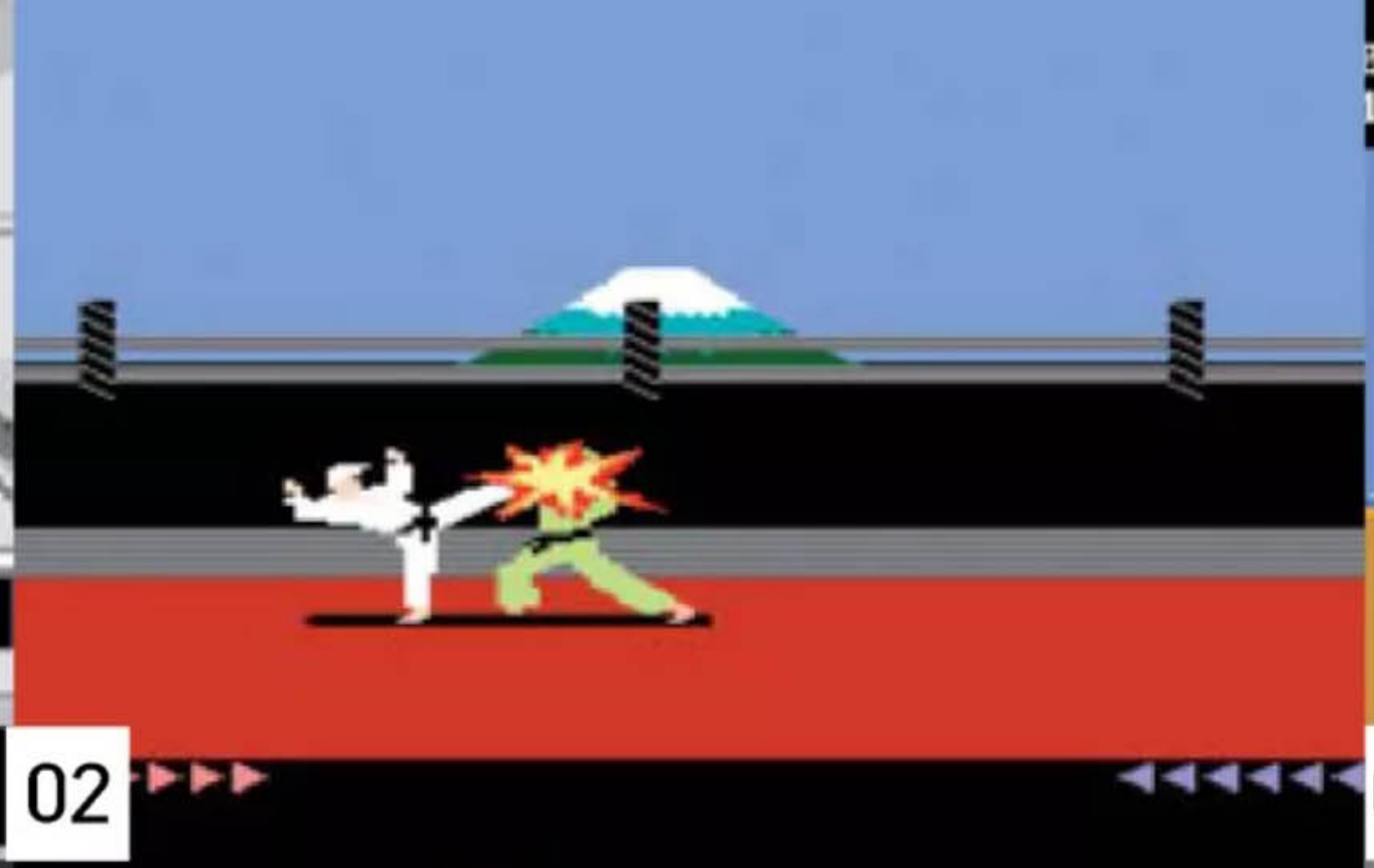
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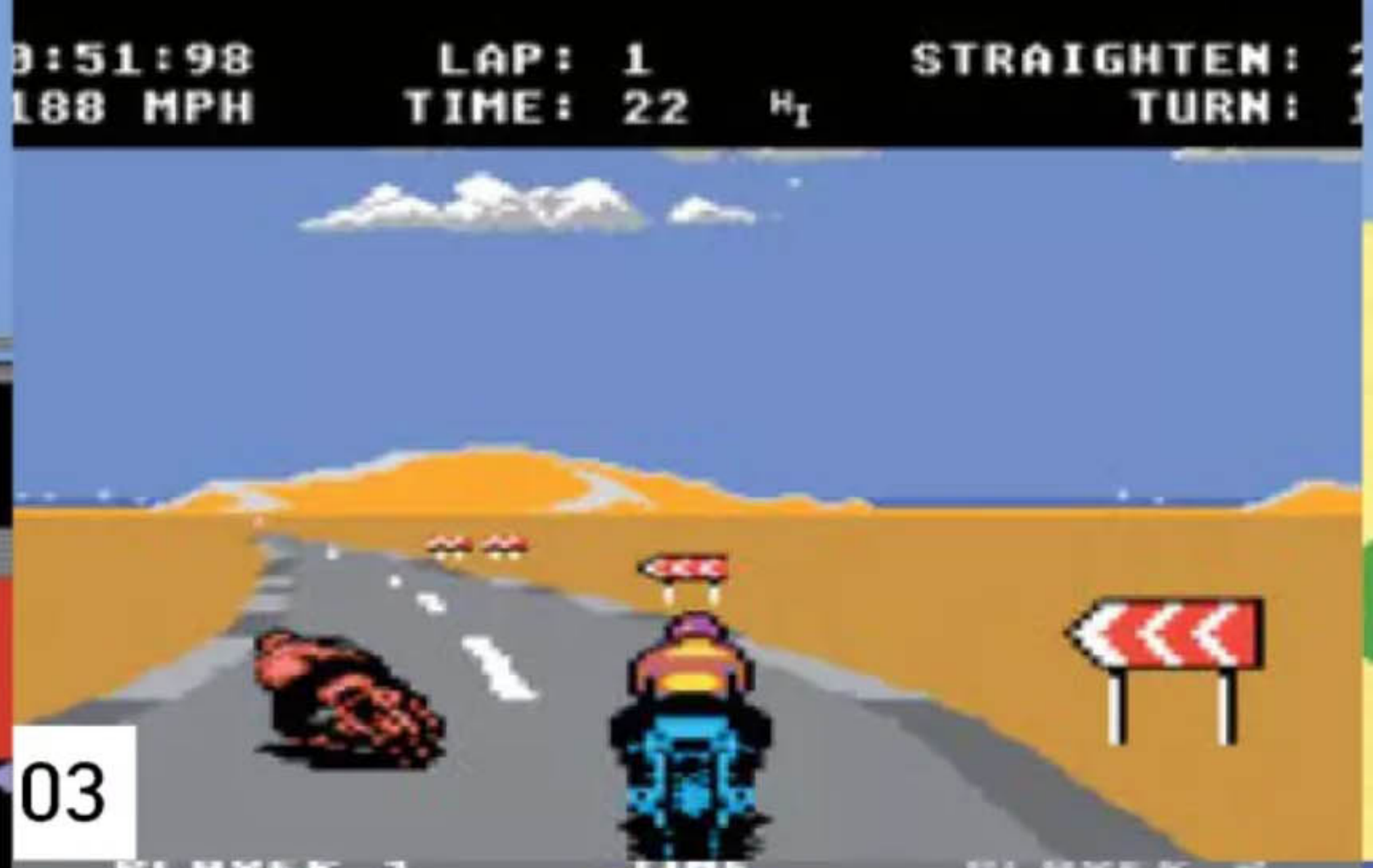
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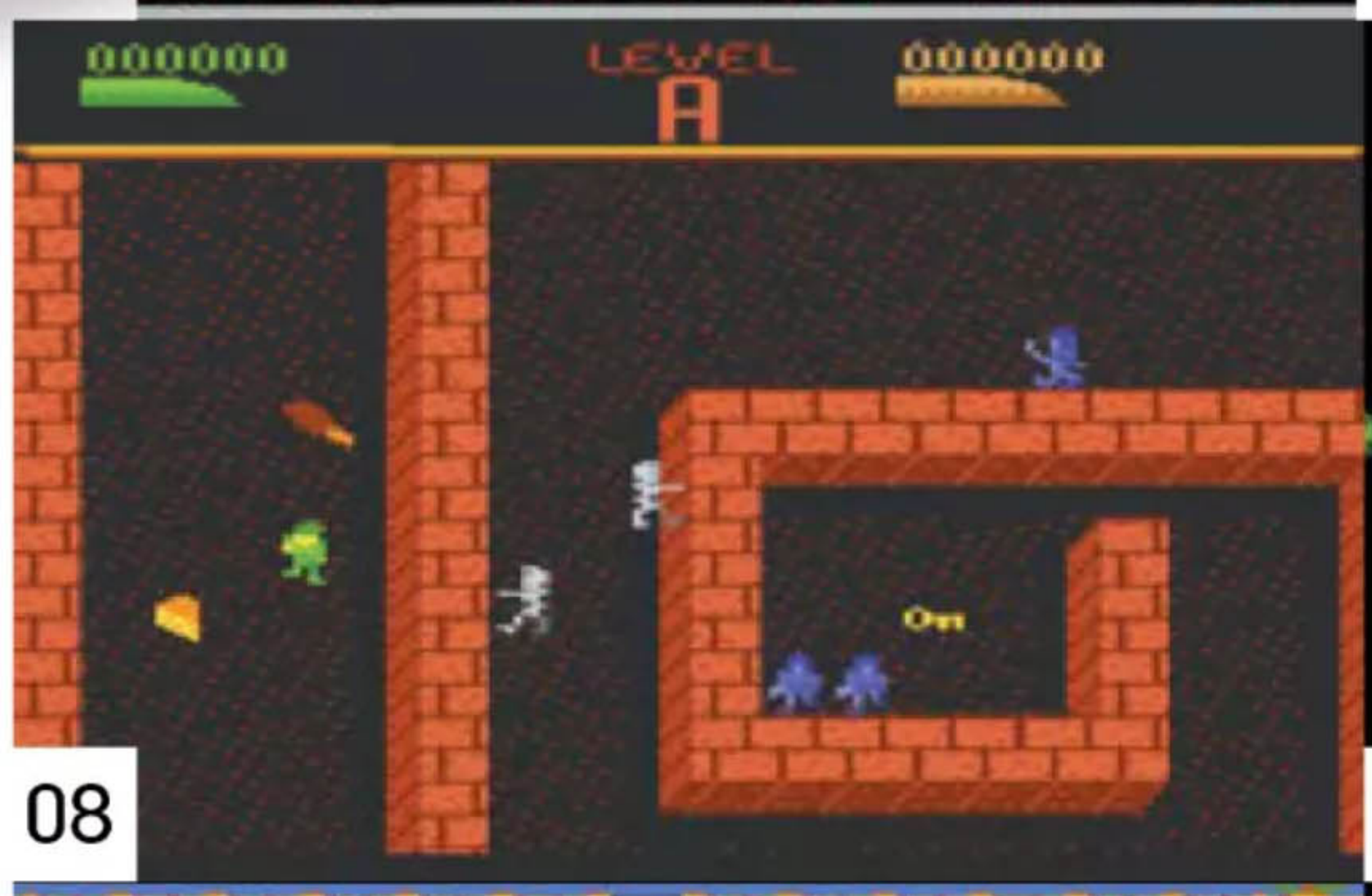
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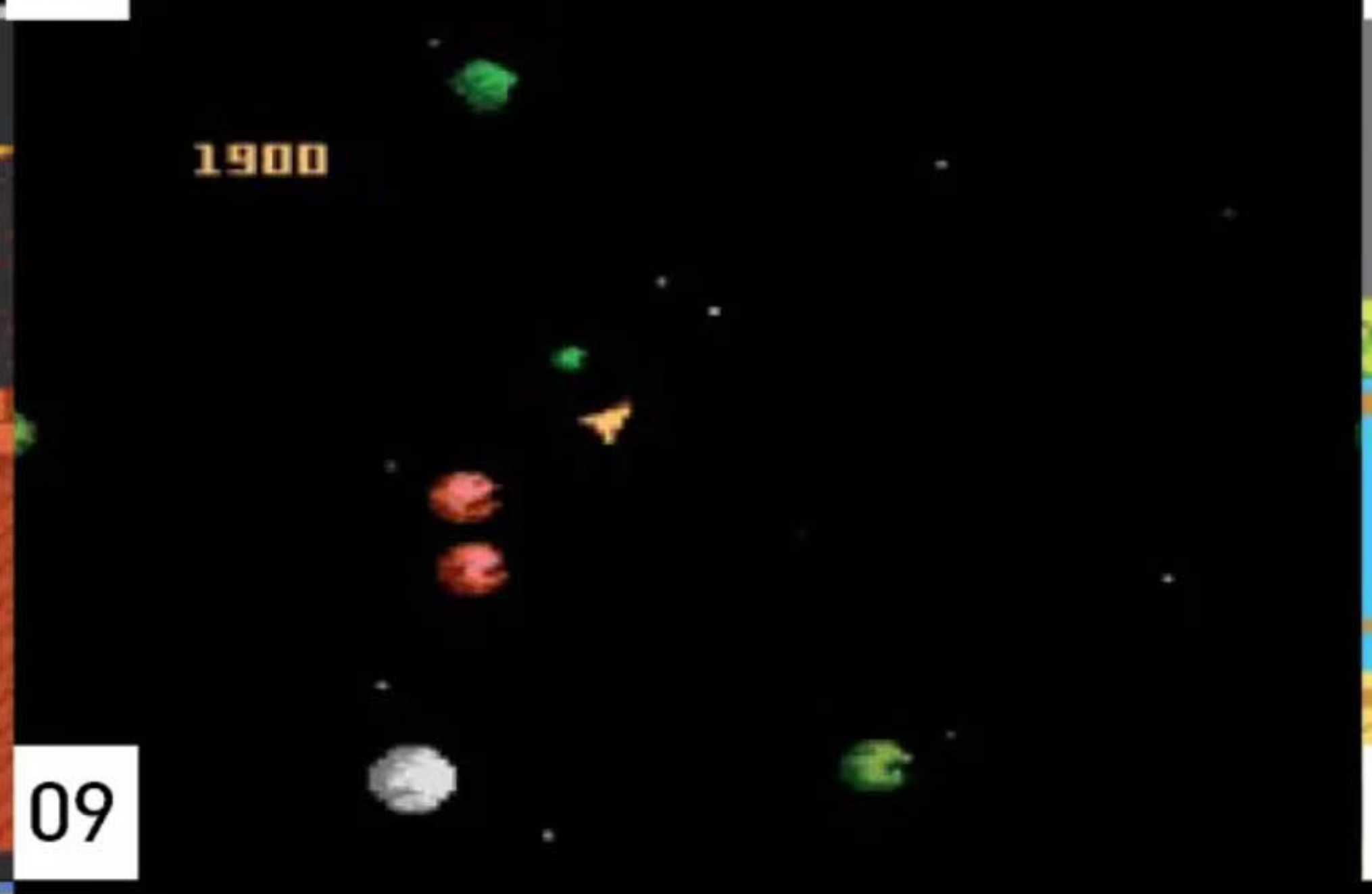
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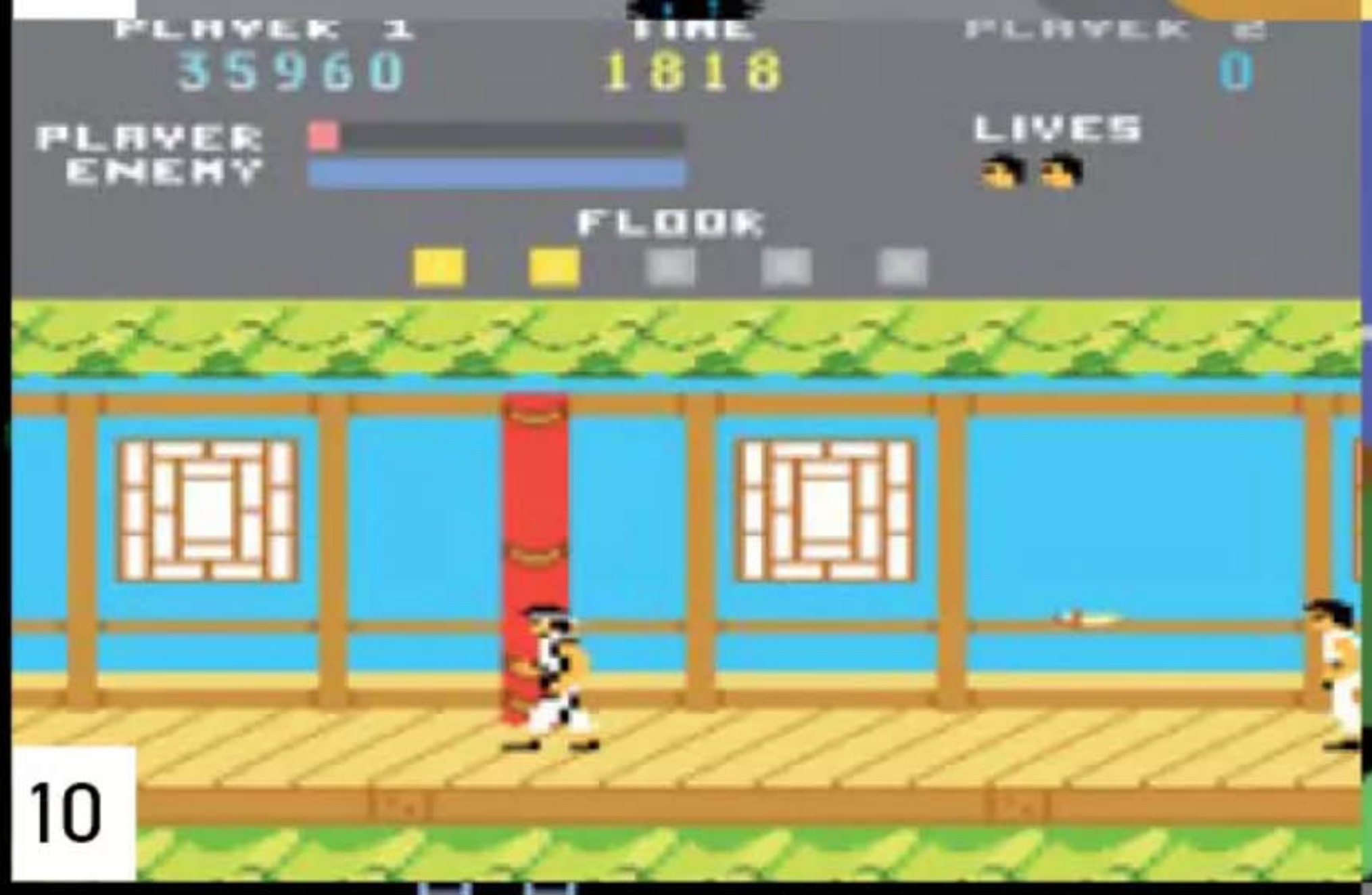
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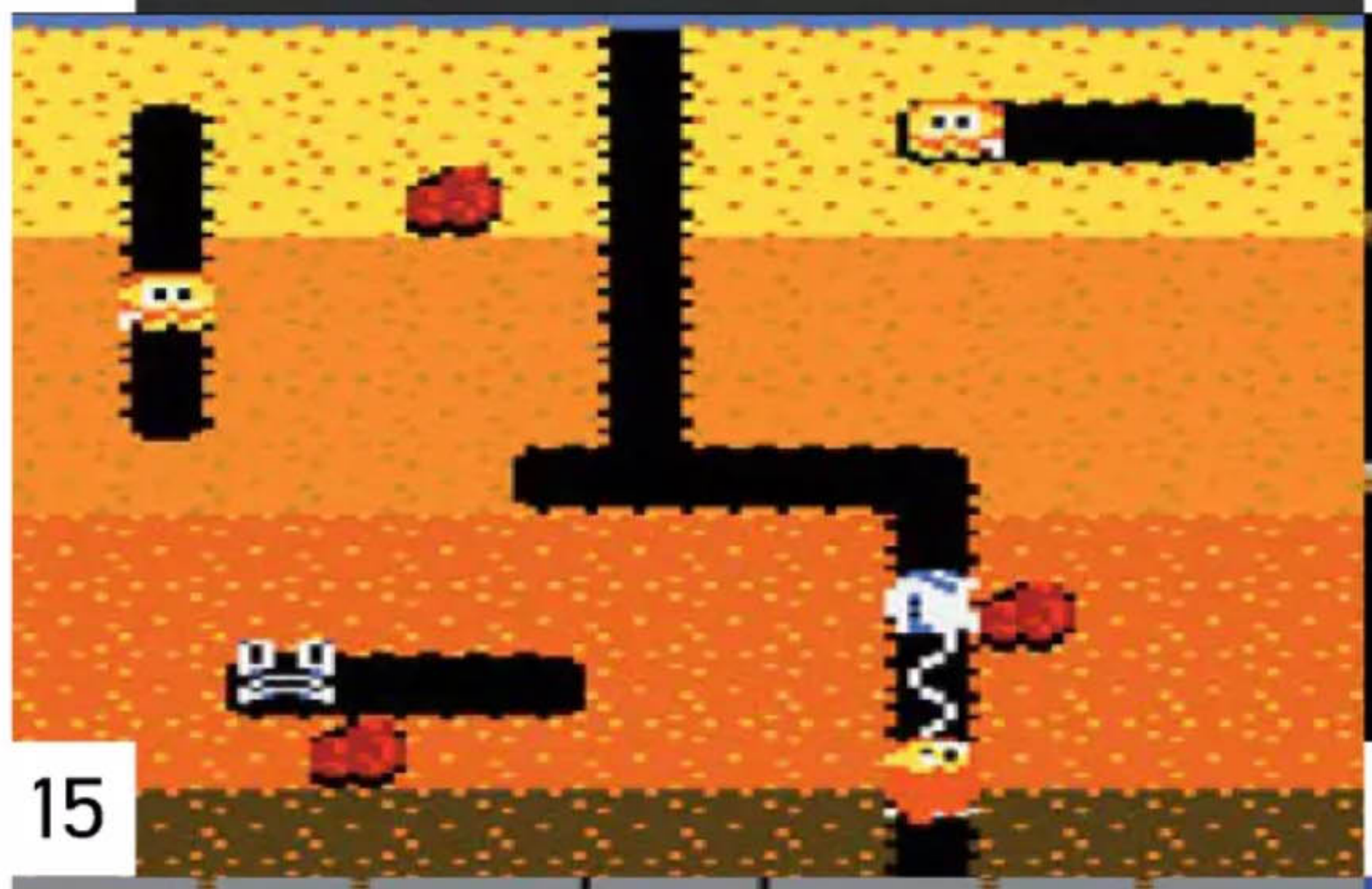
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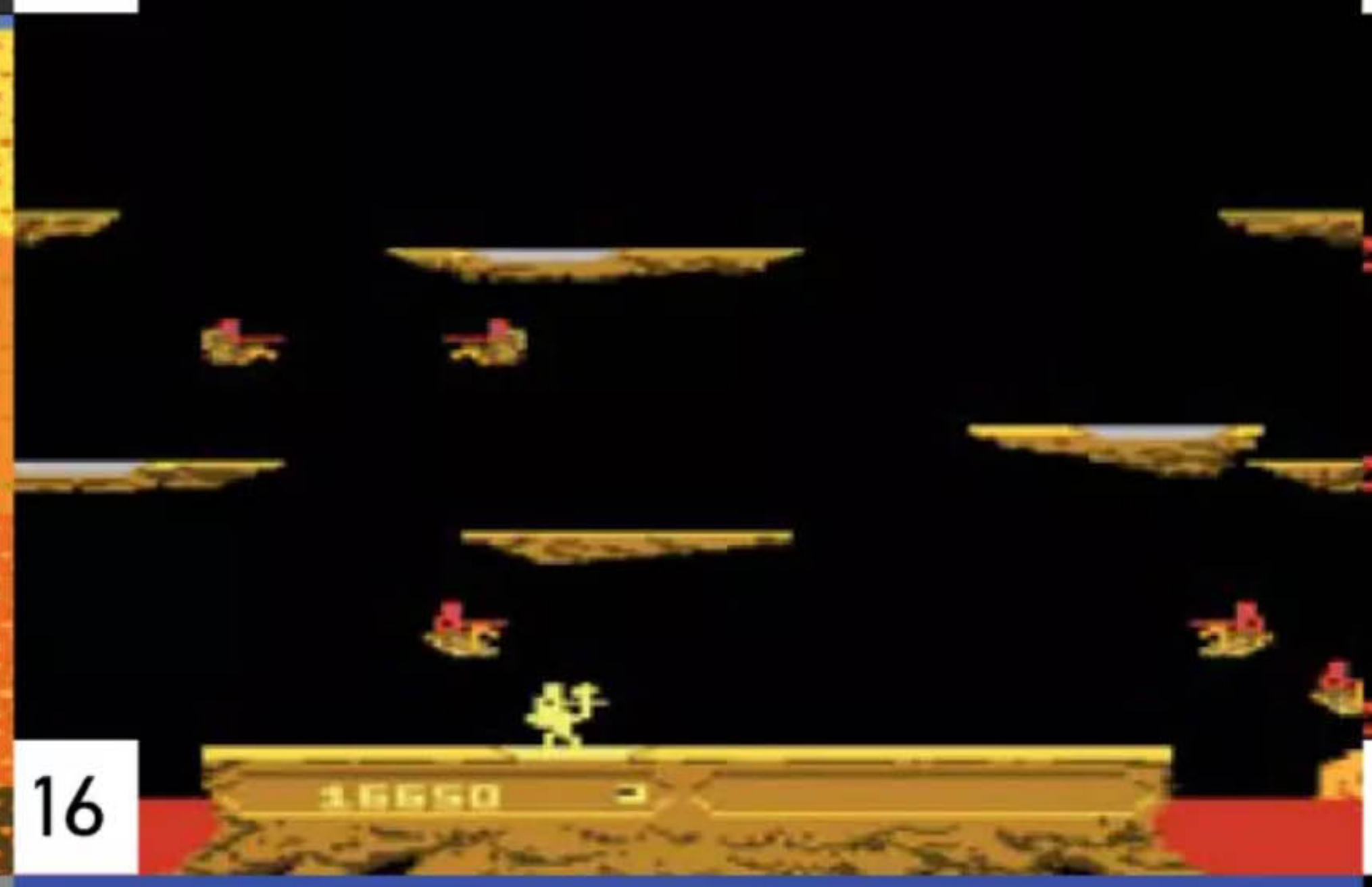
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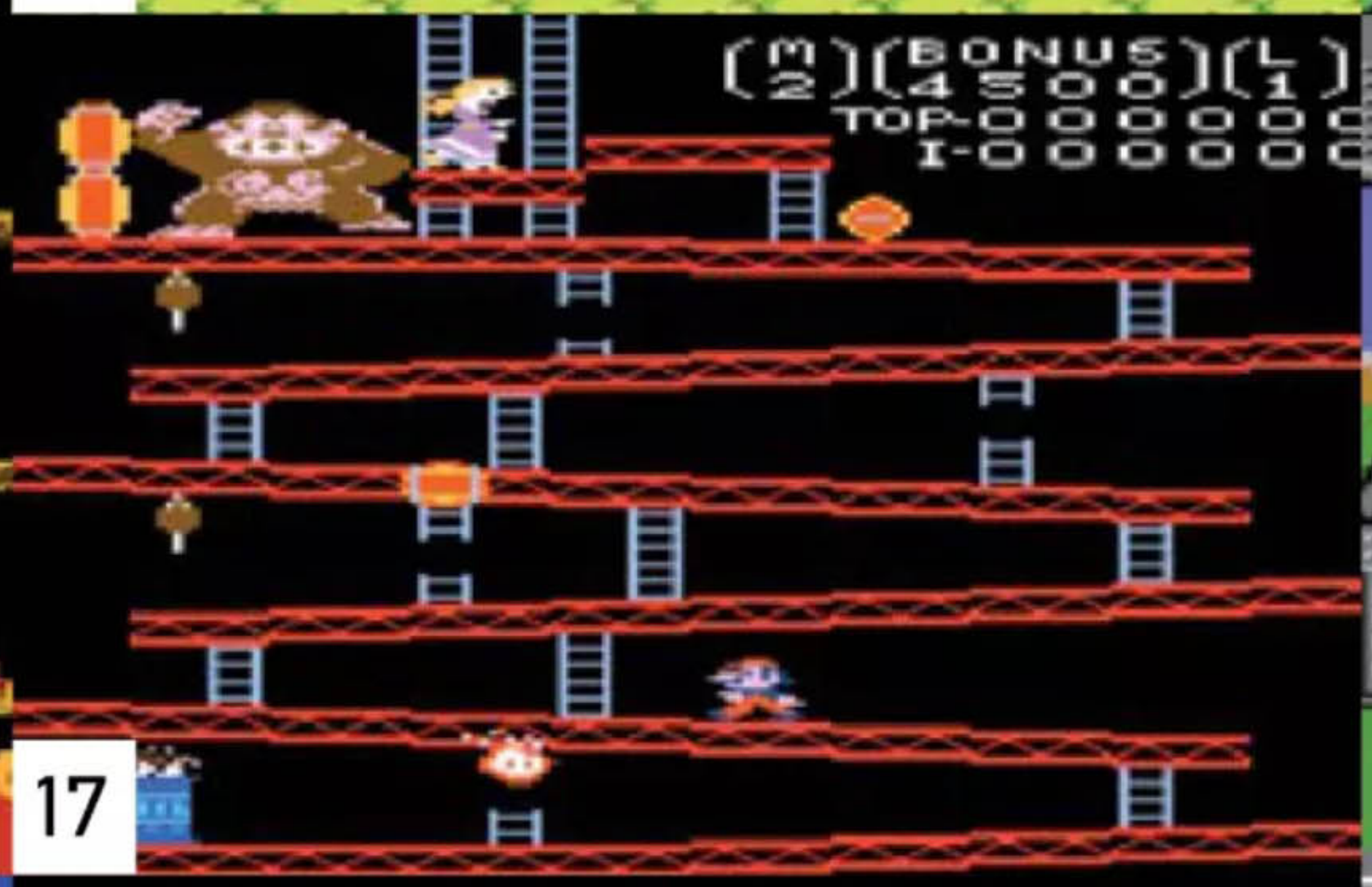
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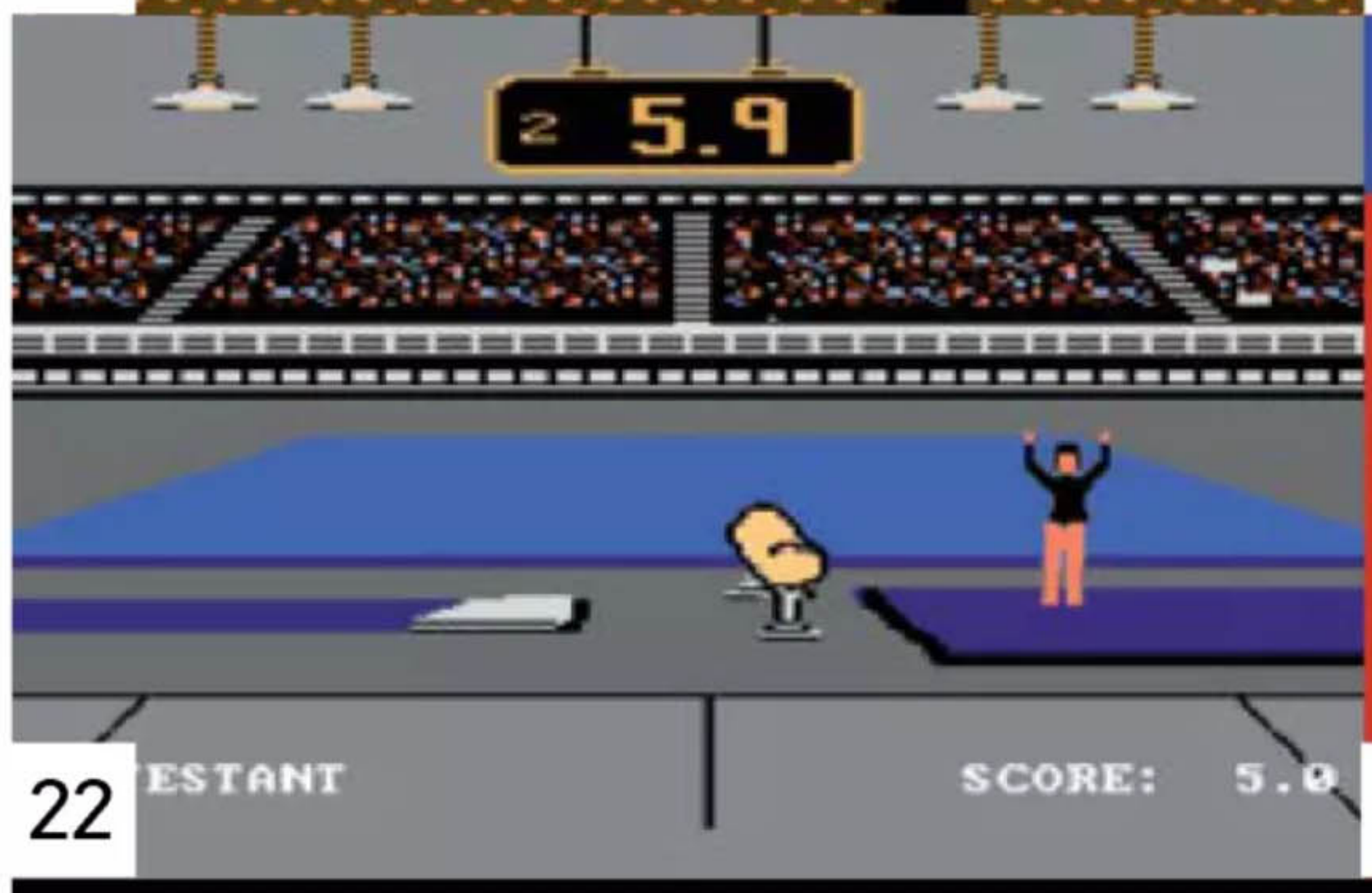
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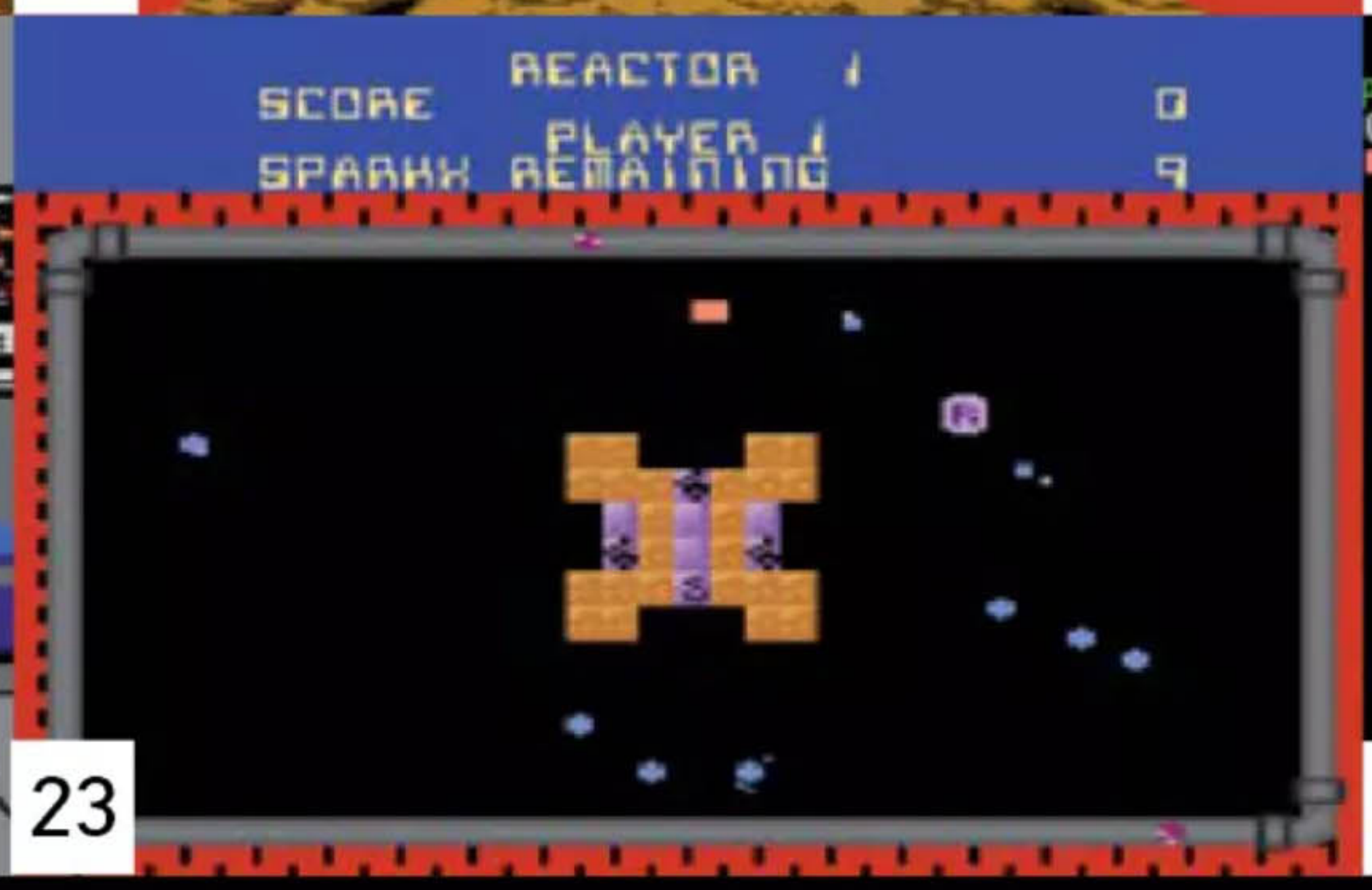
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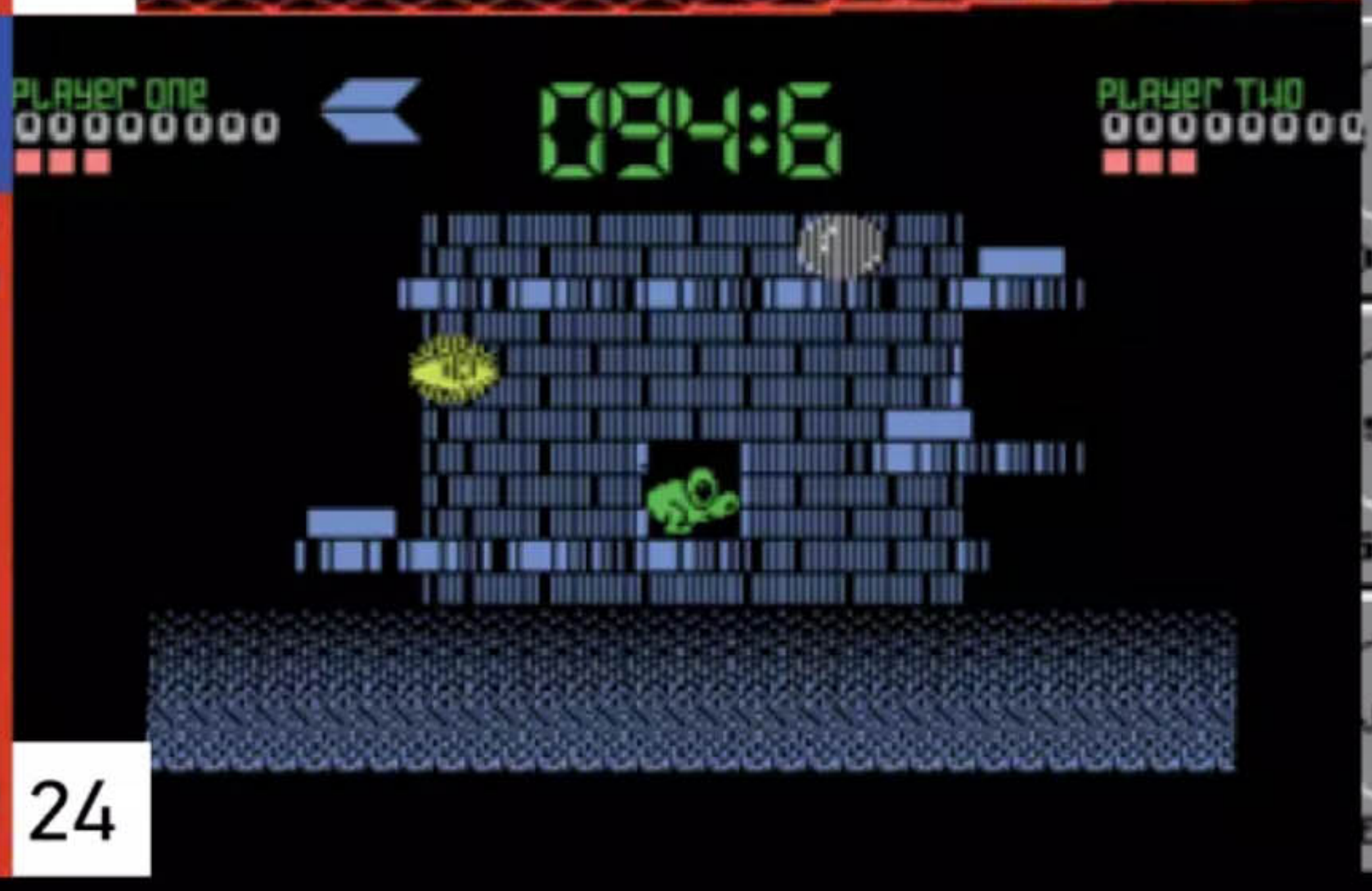
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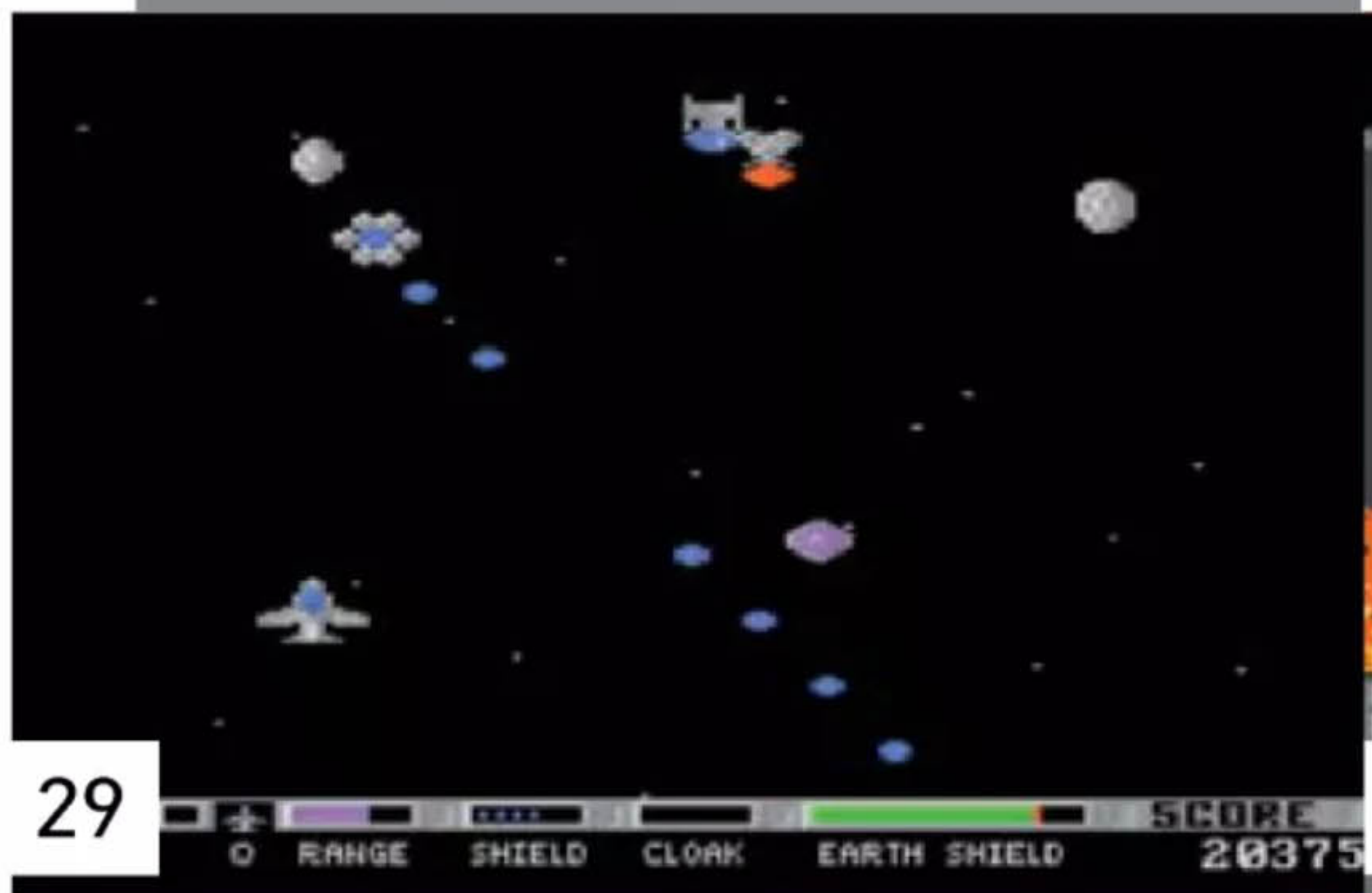
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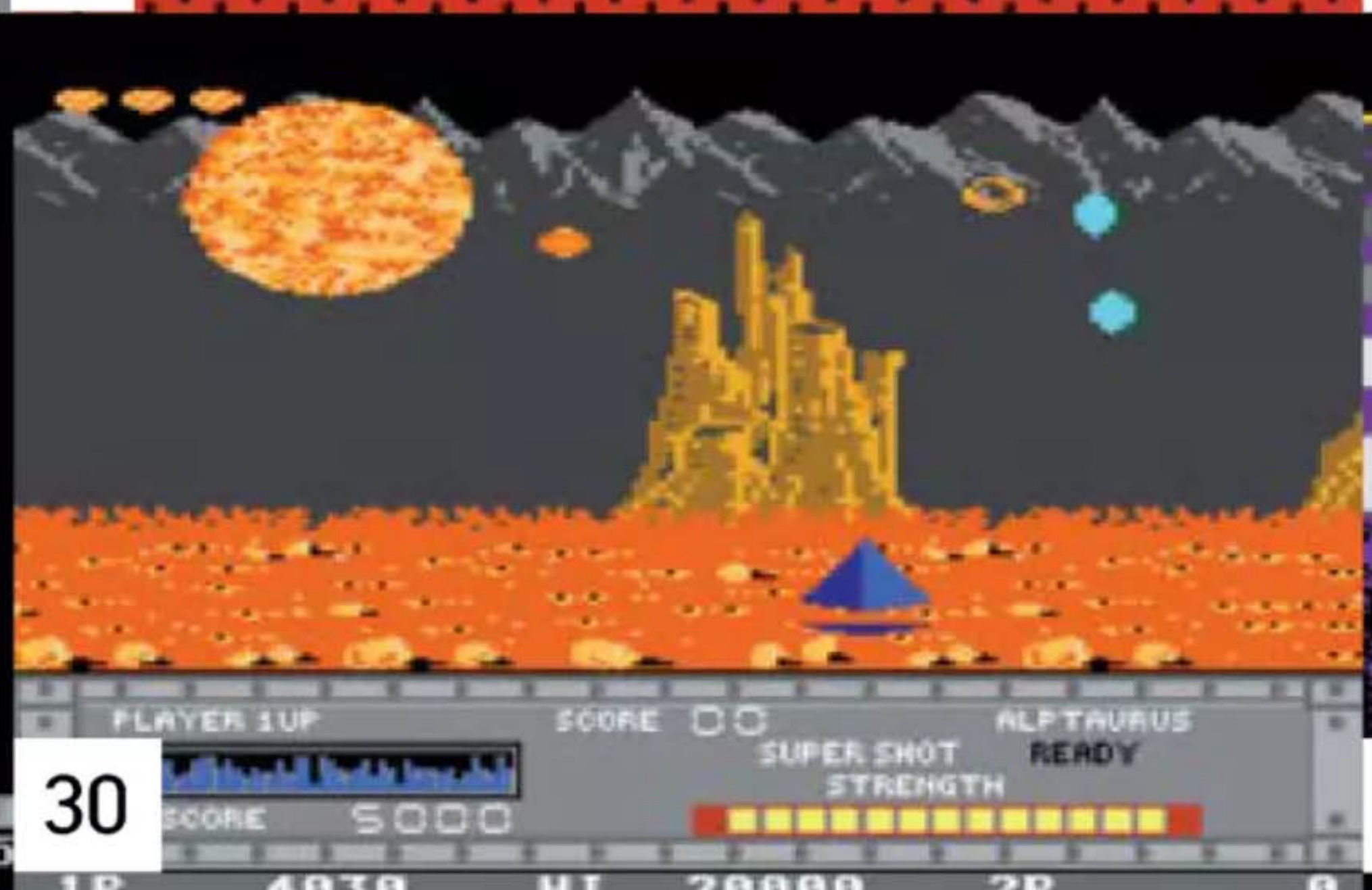
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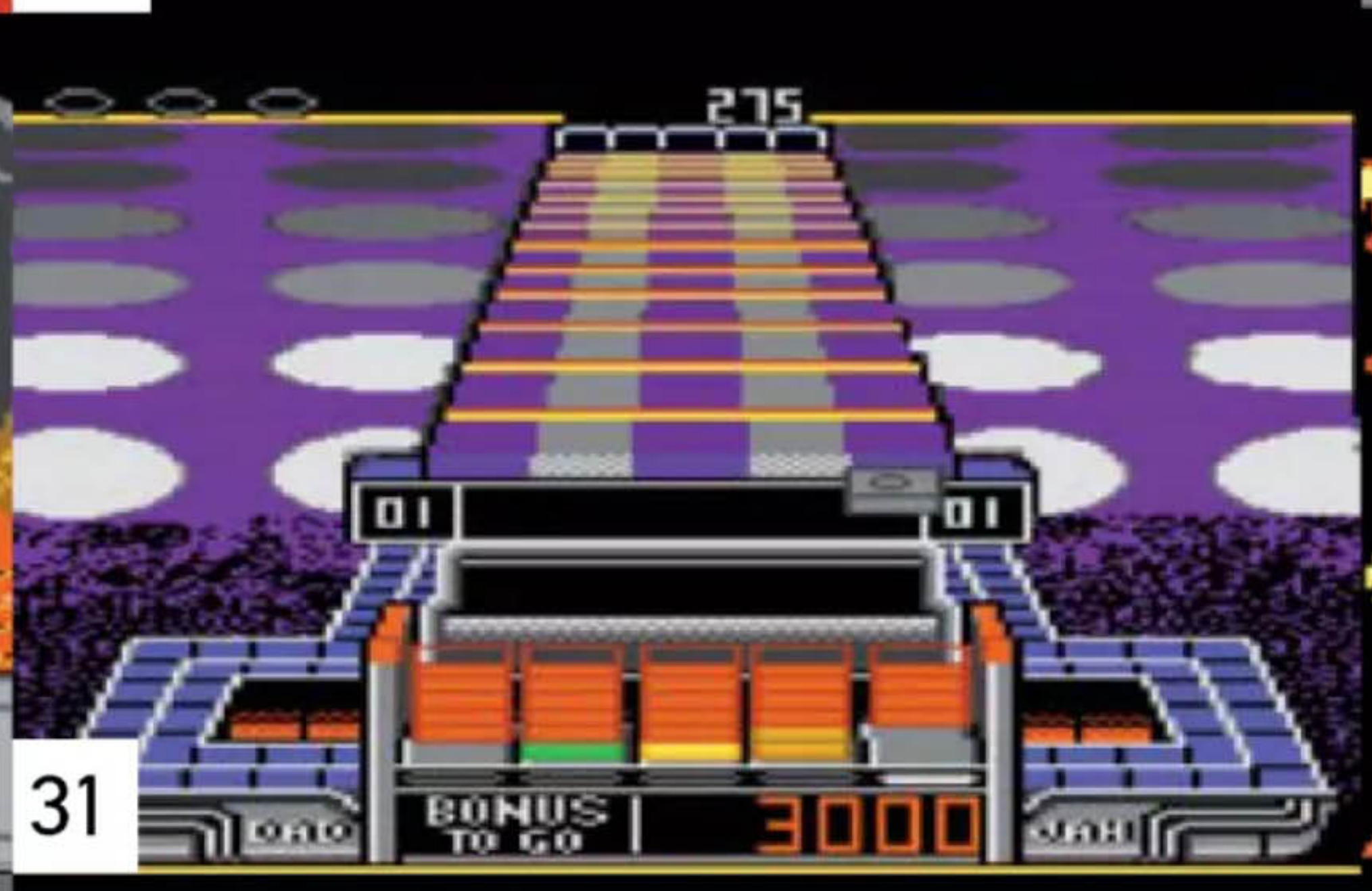
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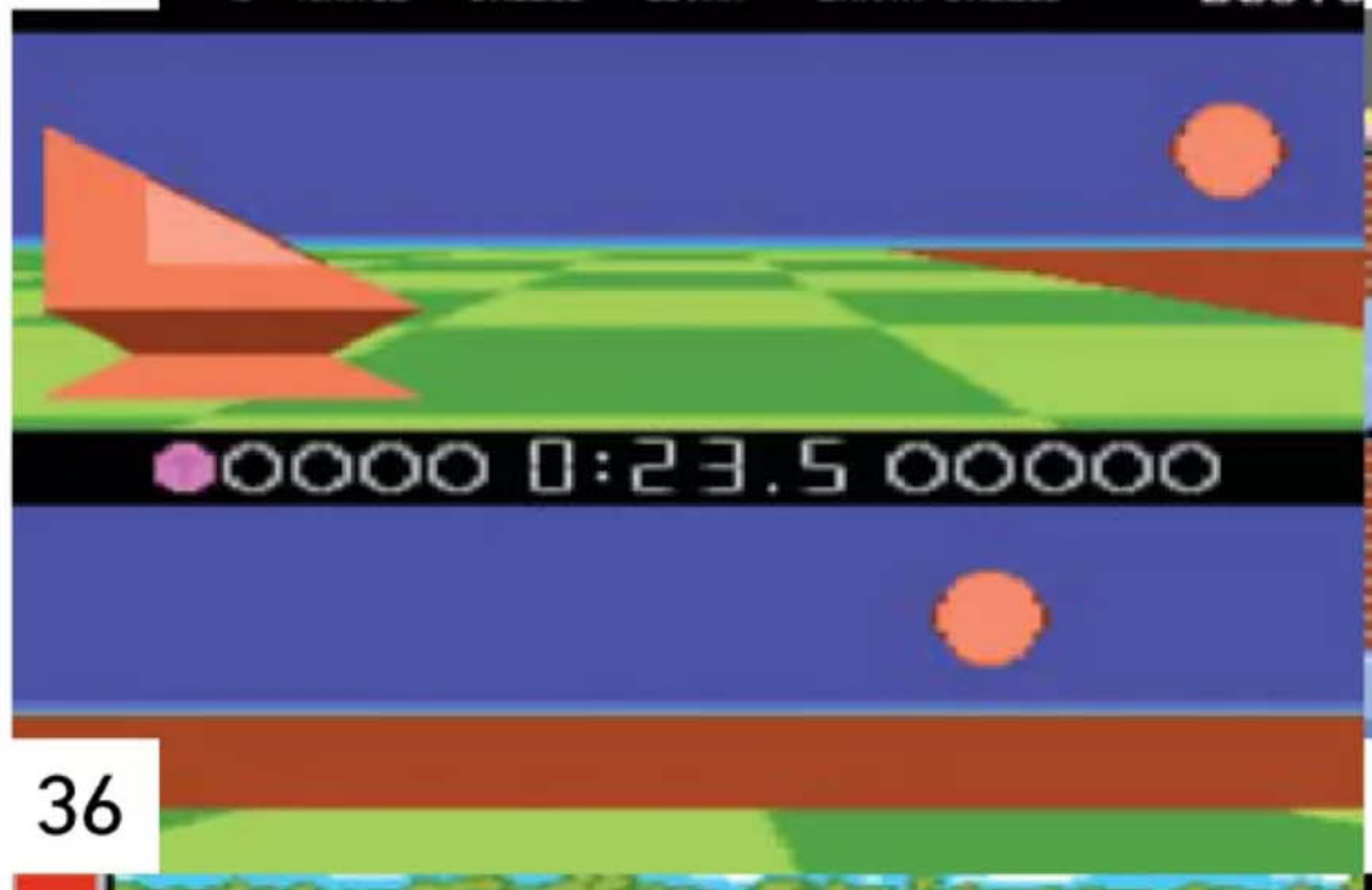
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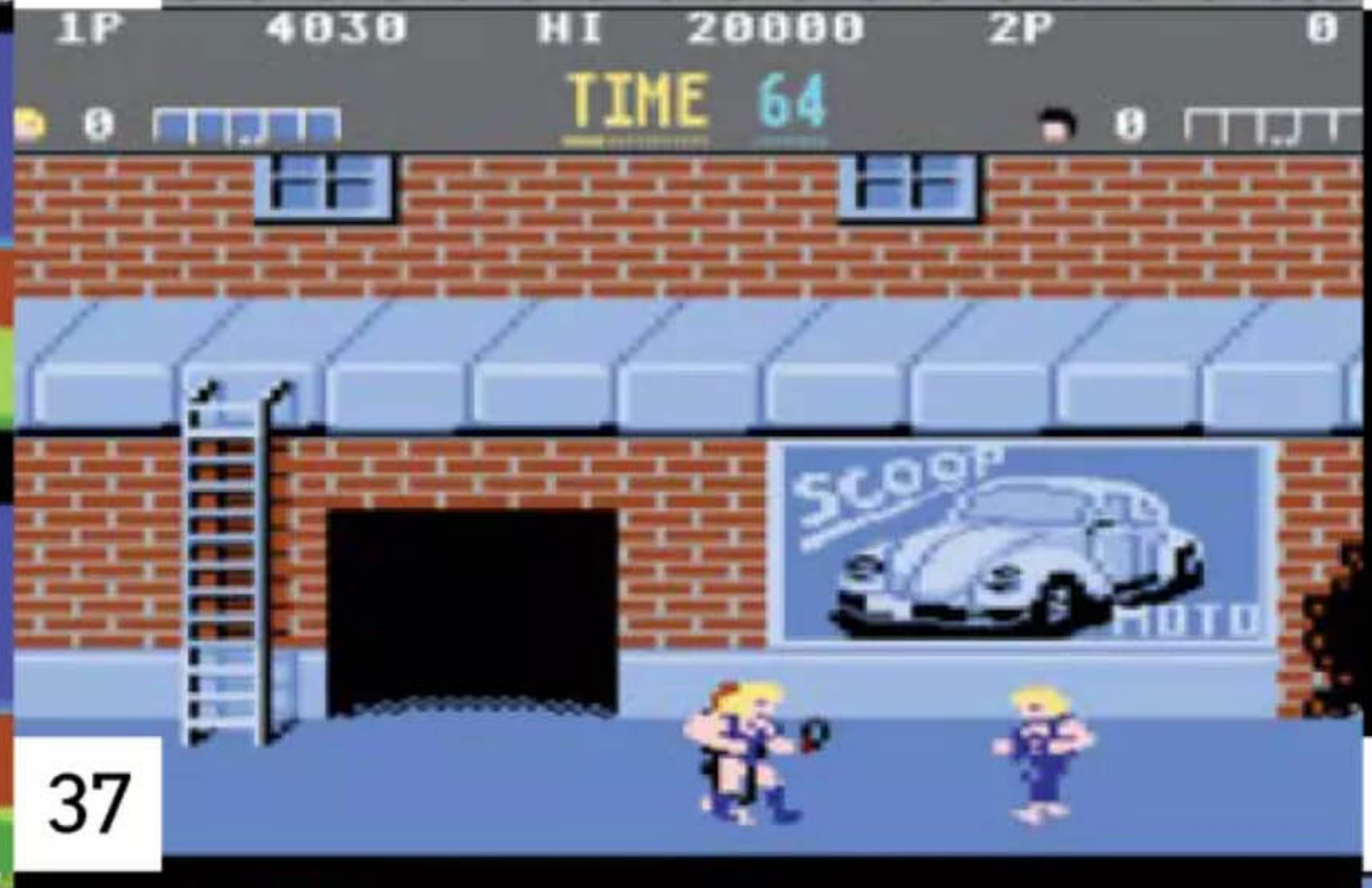
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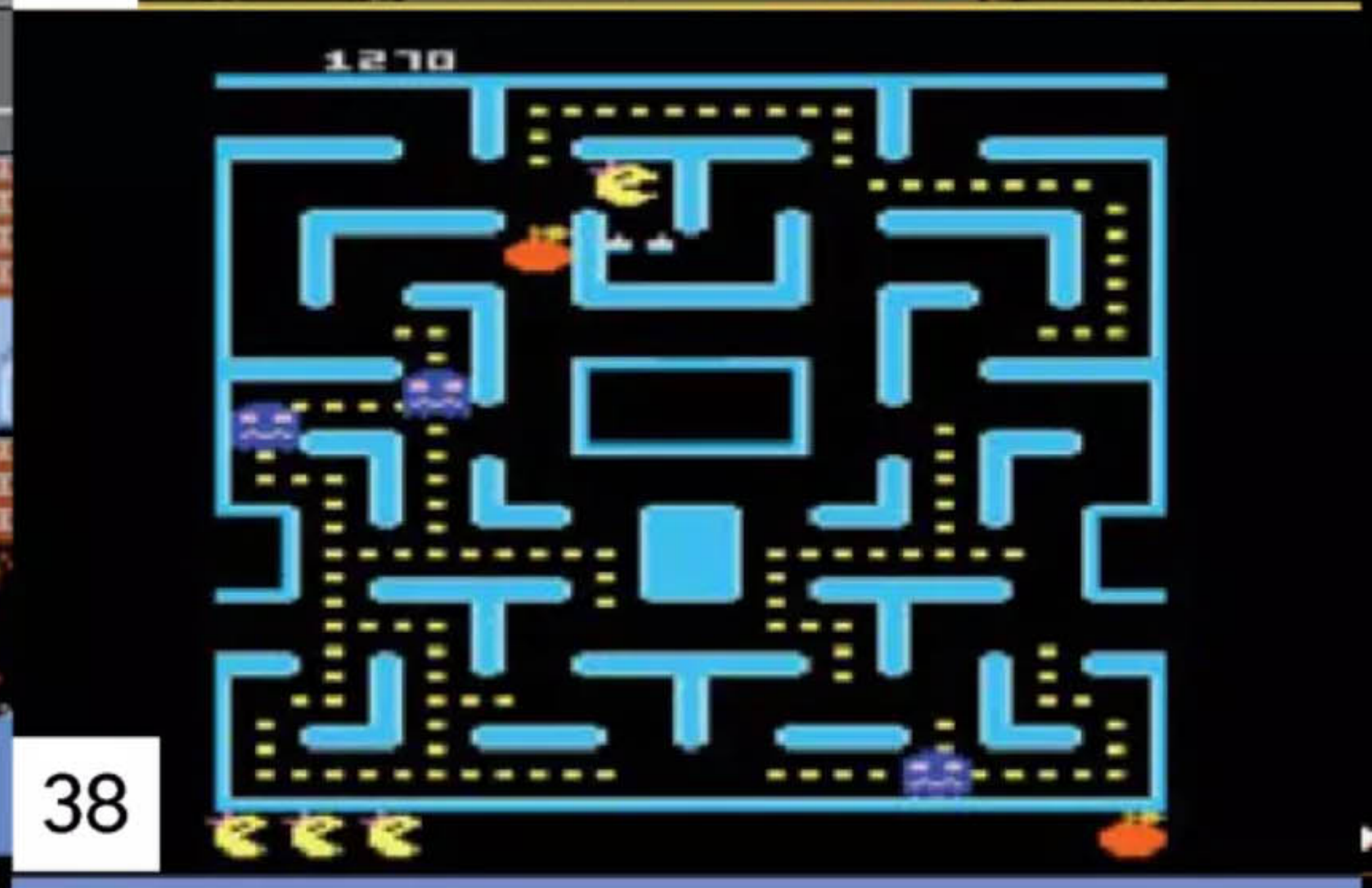
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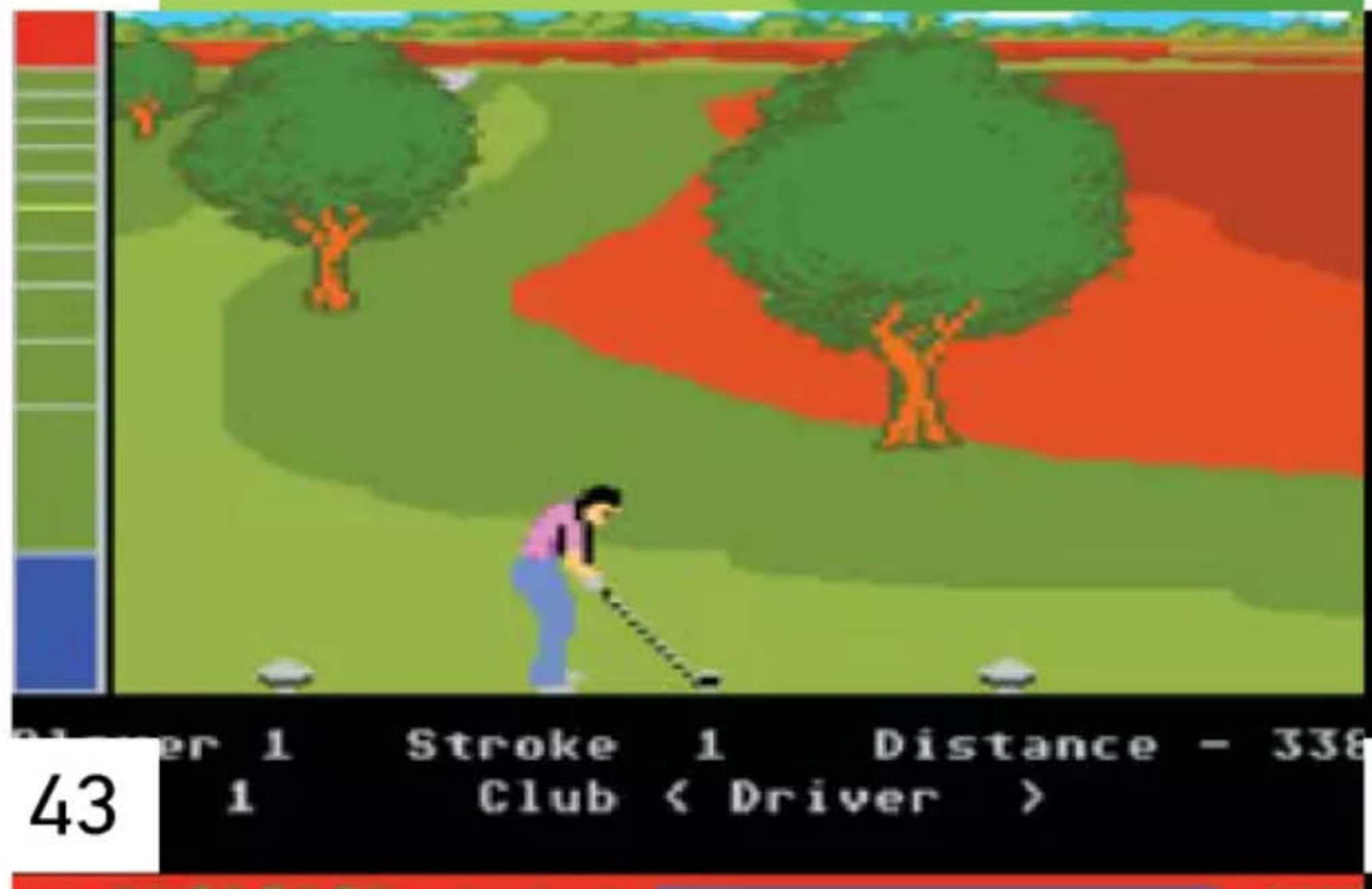
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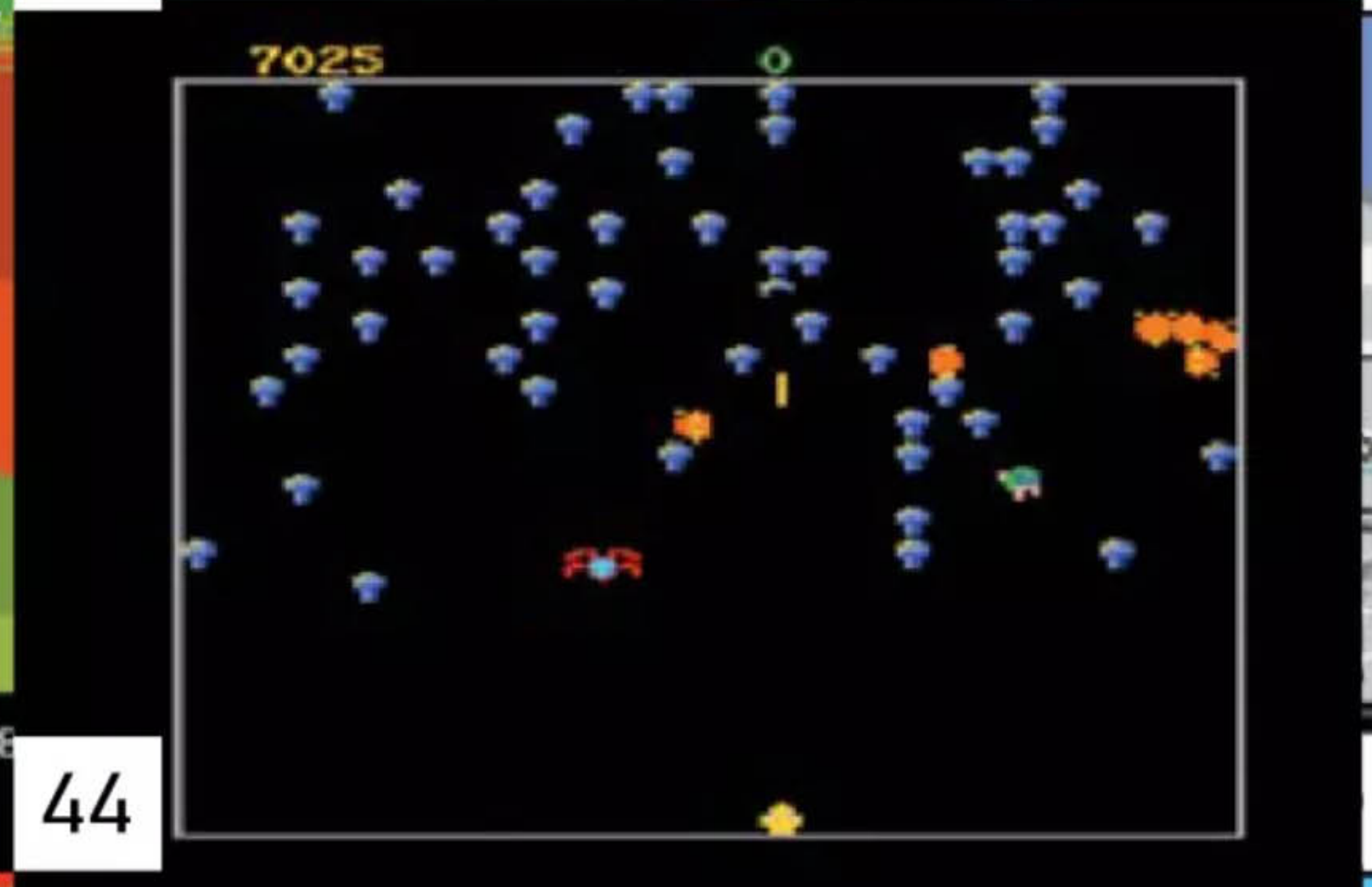
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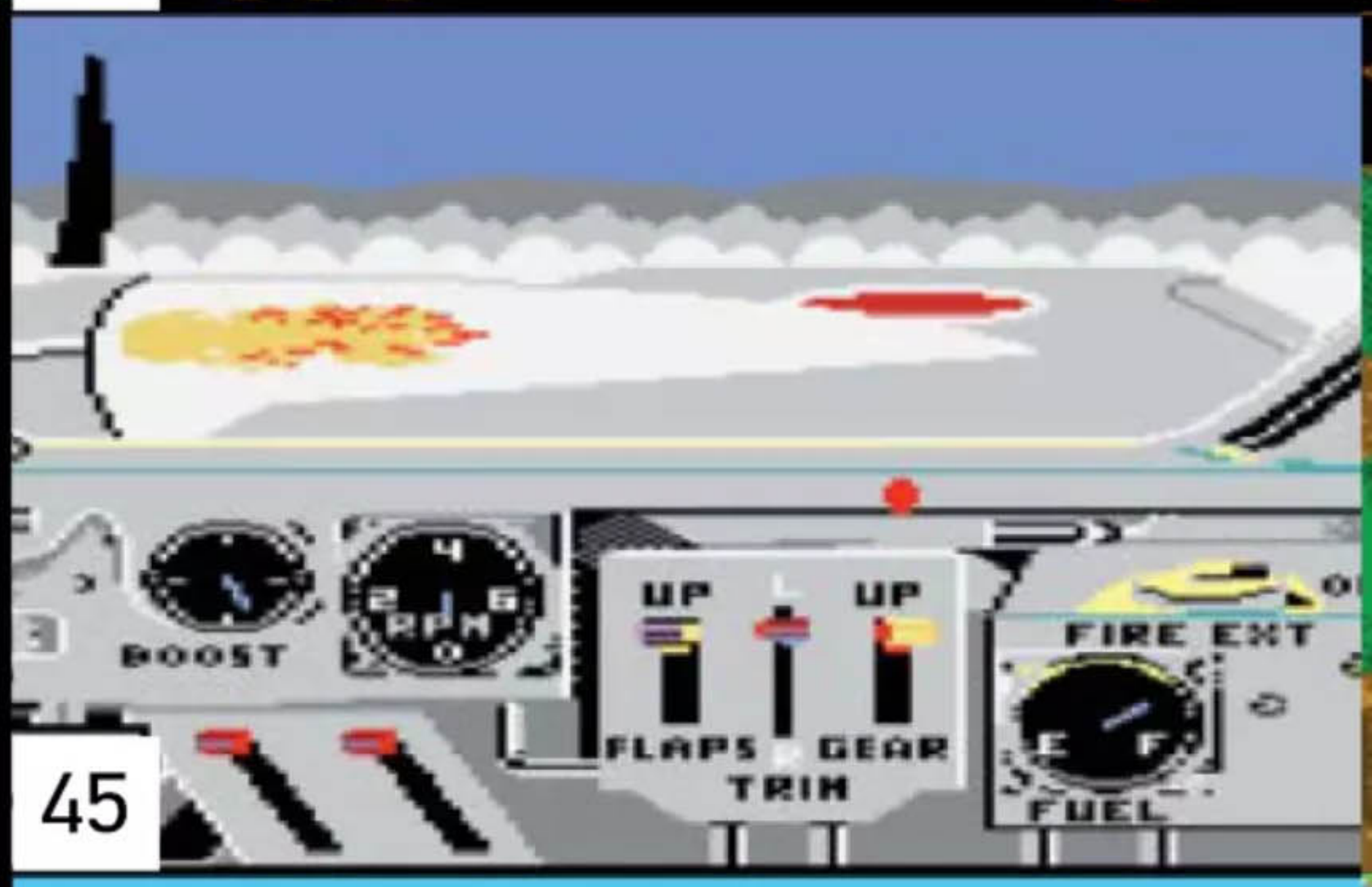
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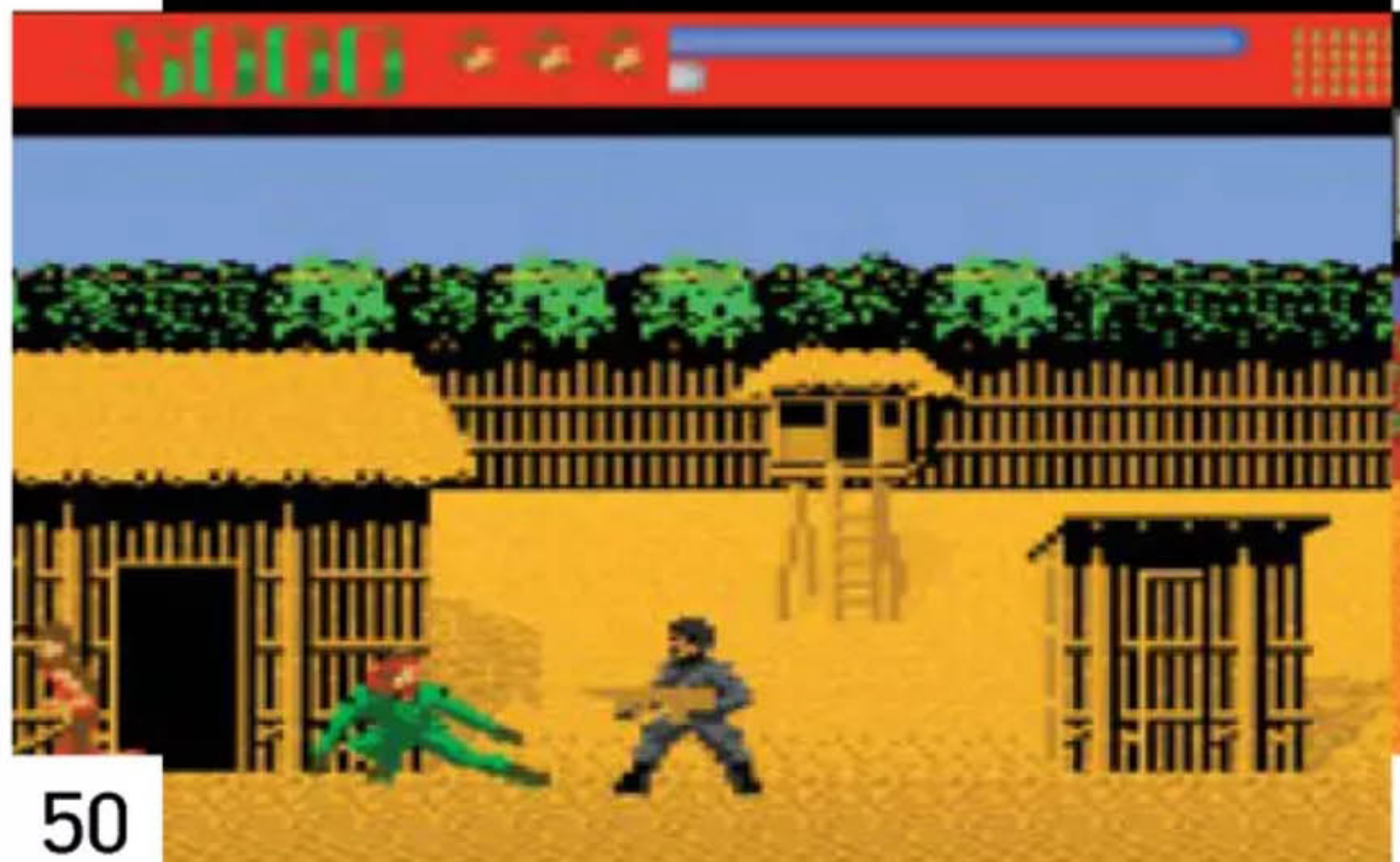
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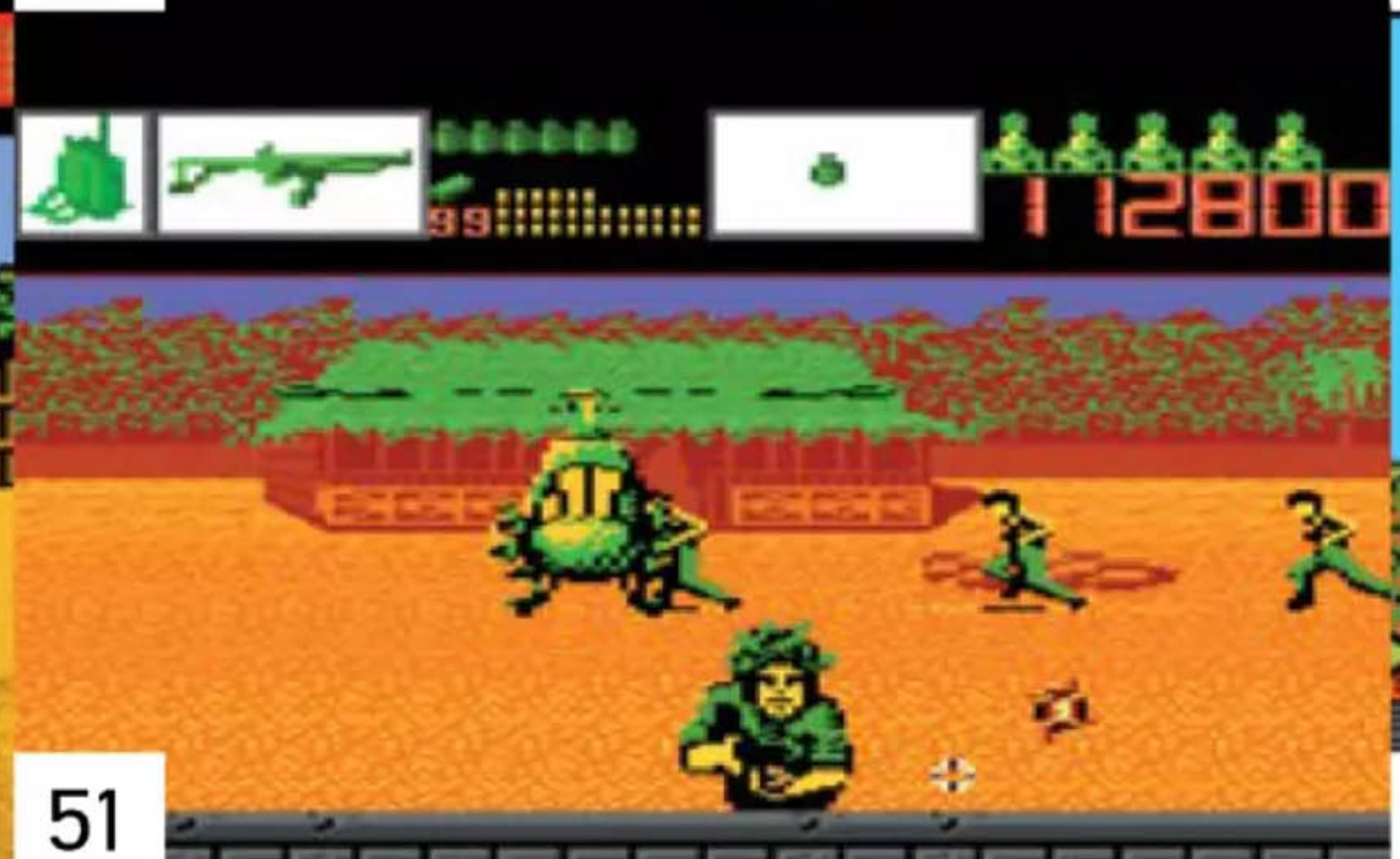
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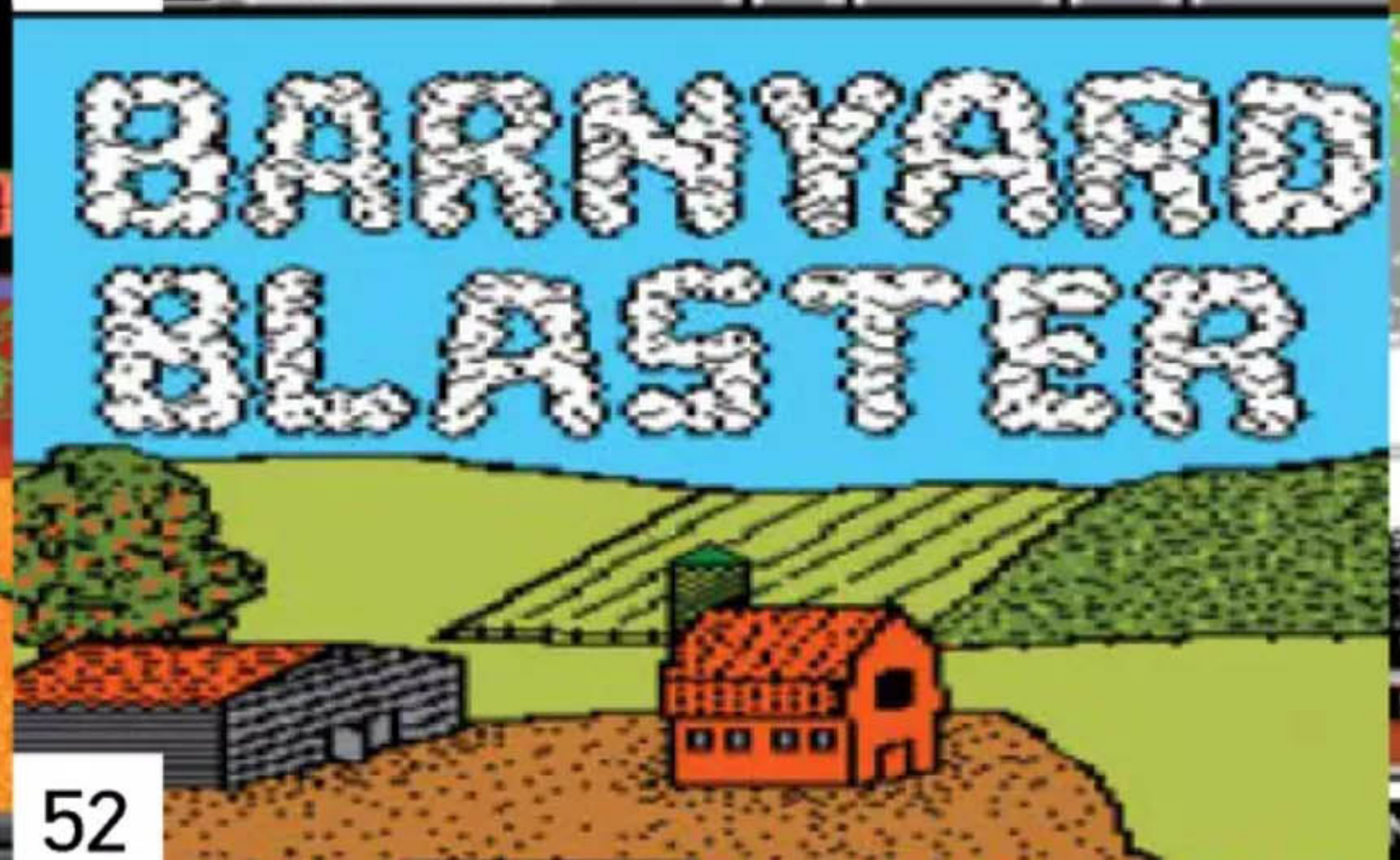
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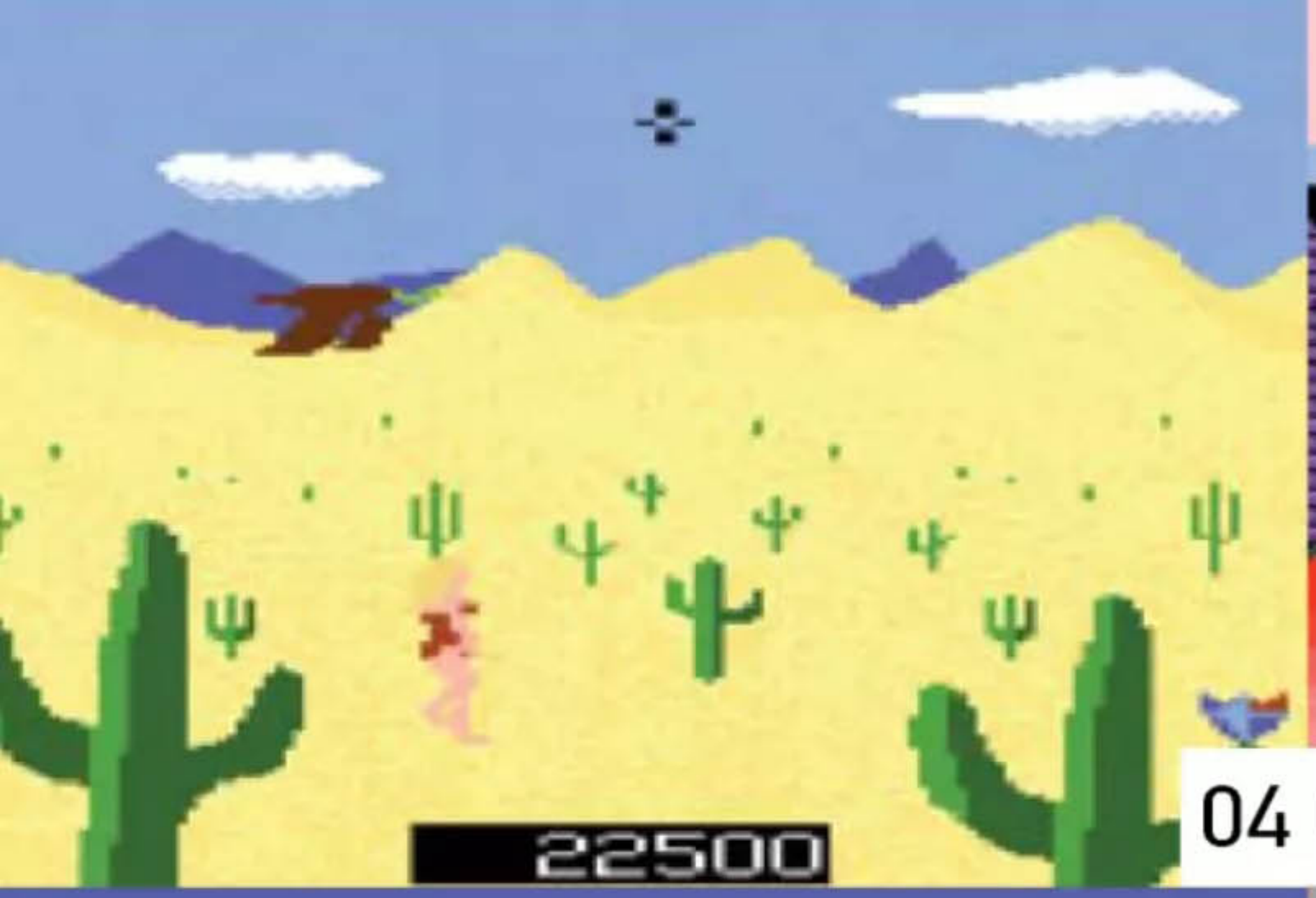

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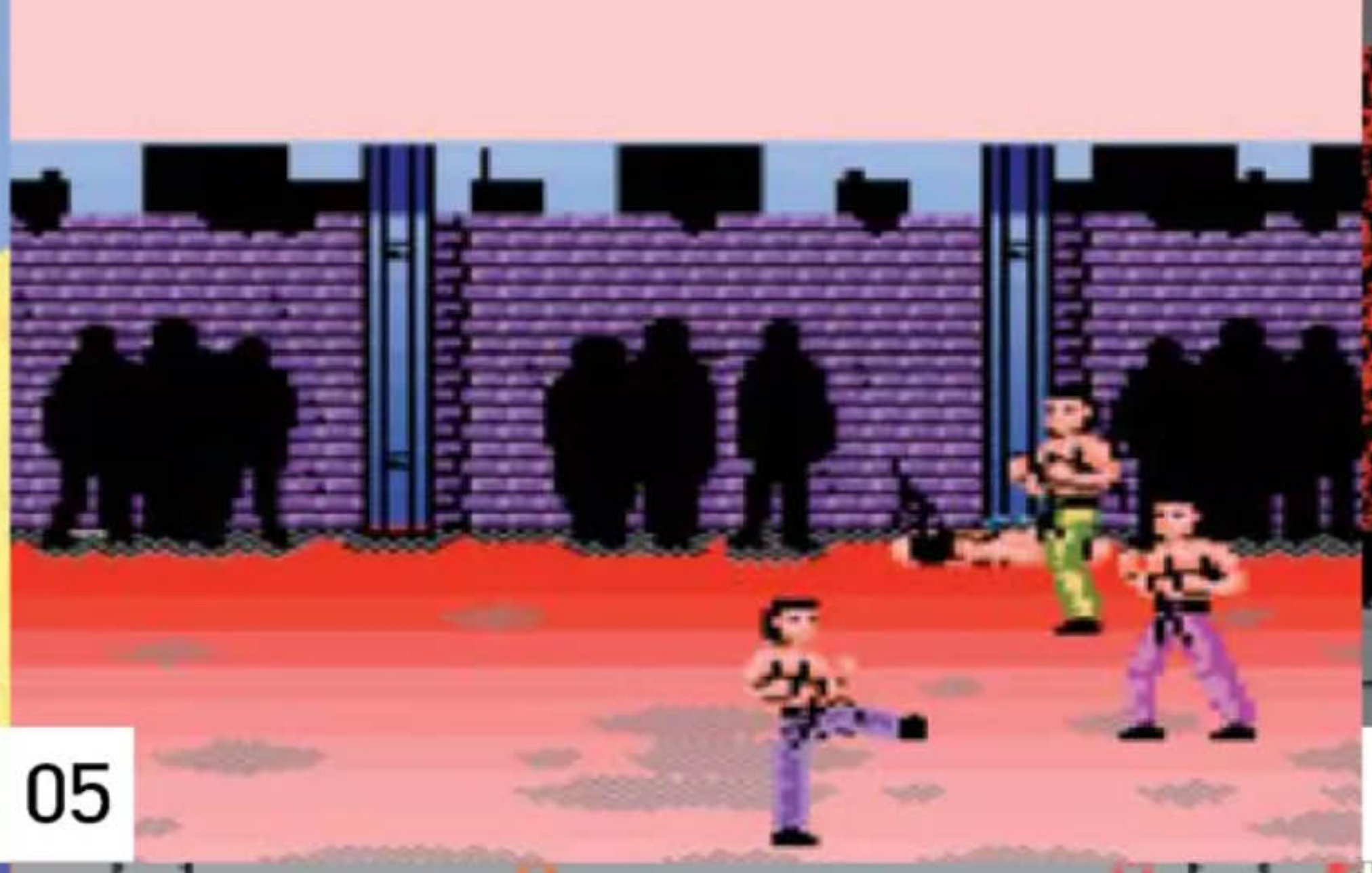

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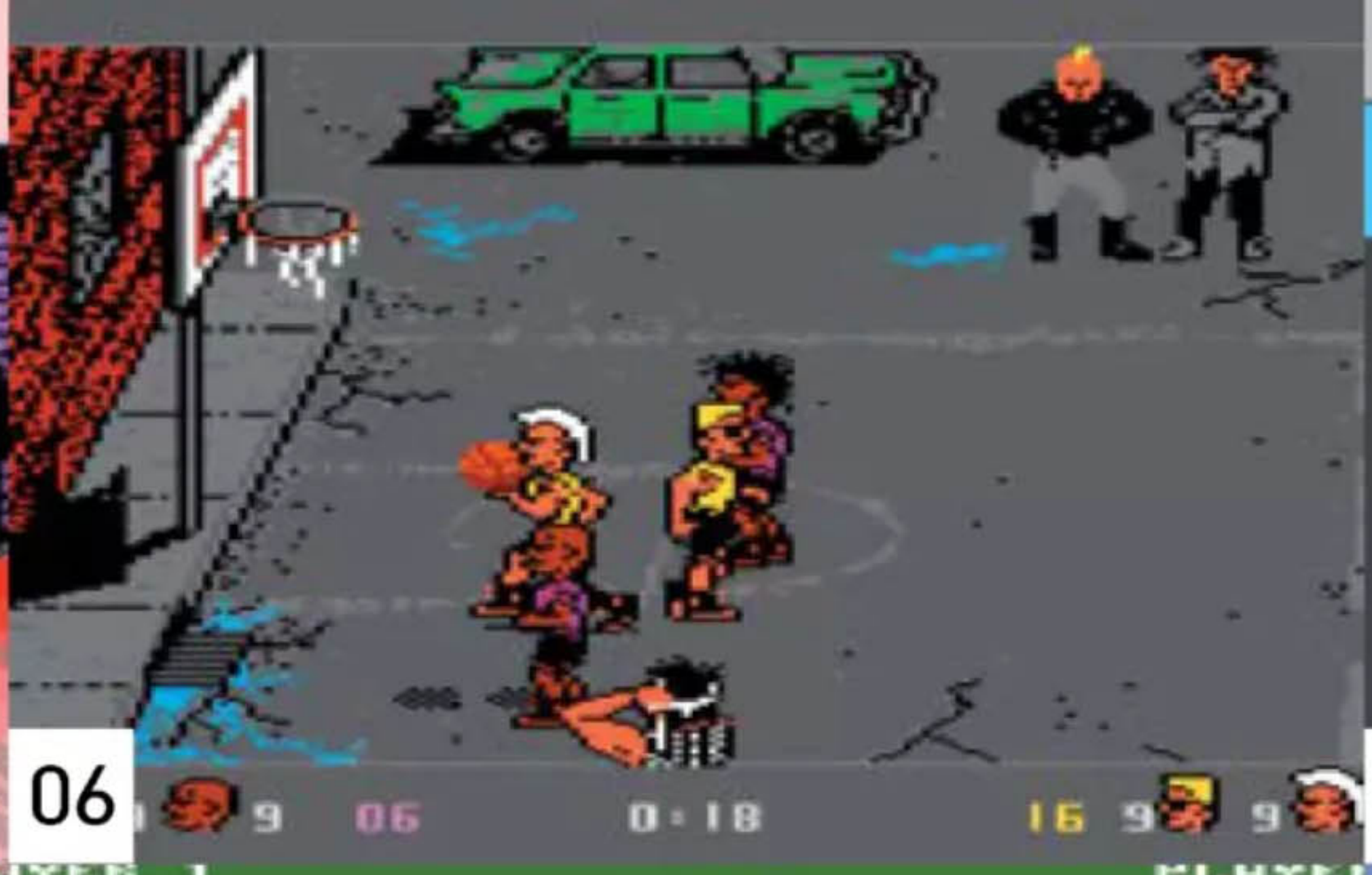

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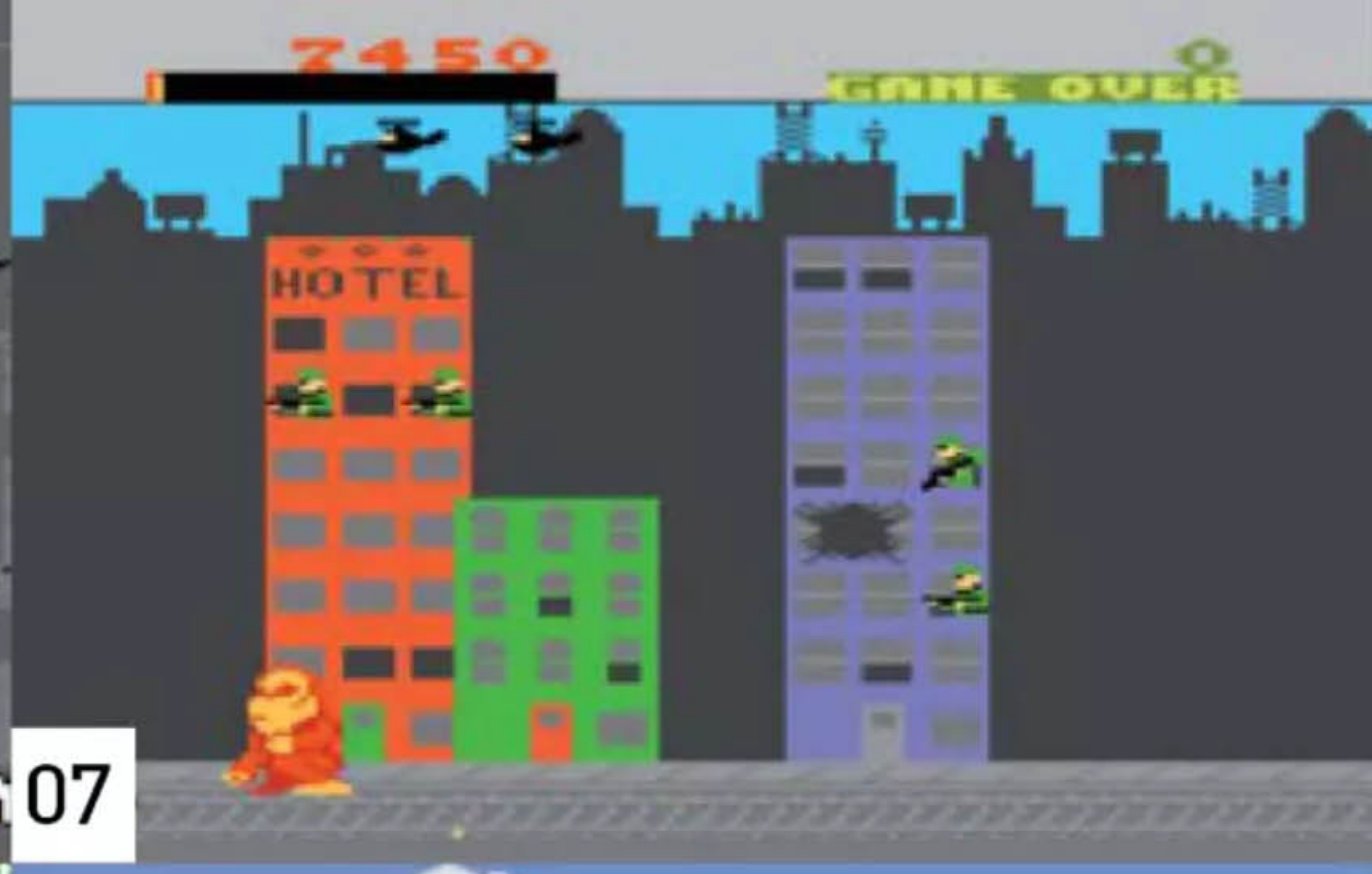
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GAME OVER
HOTEL

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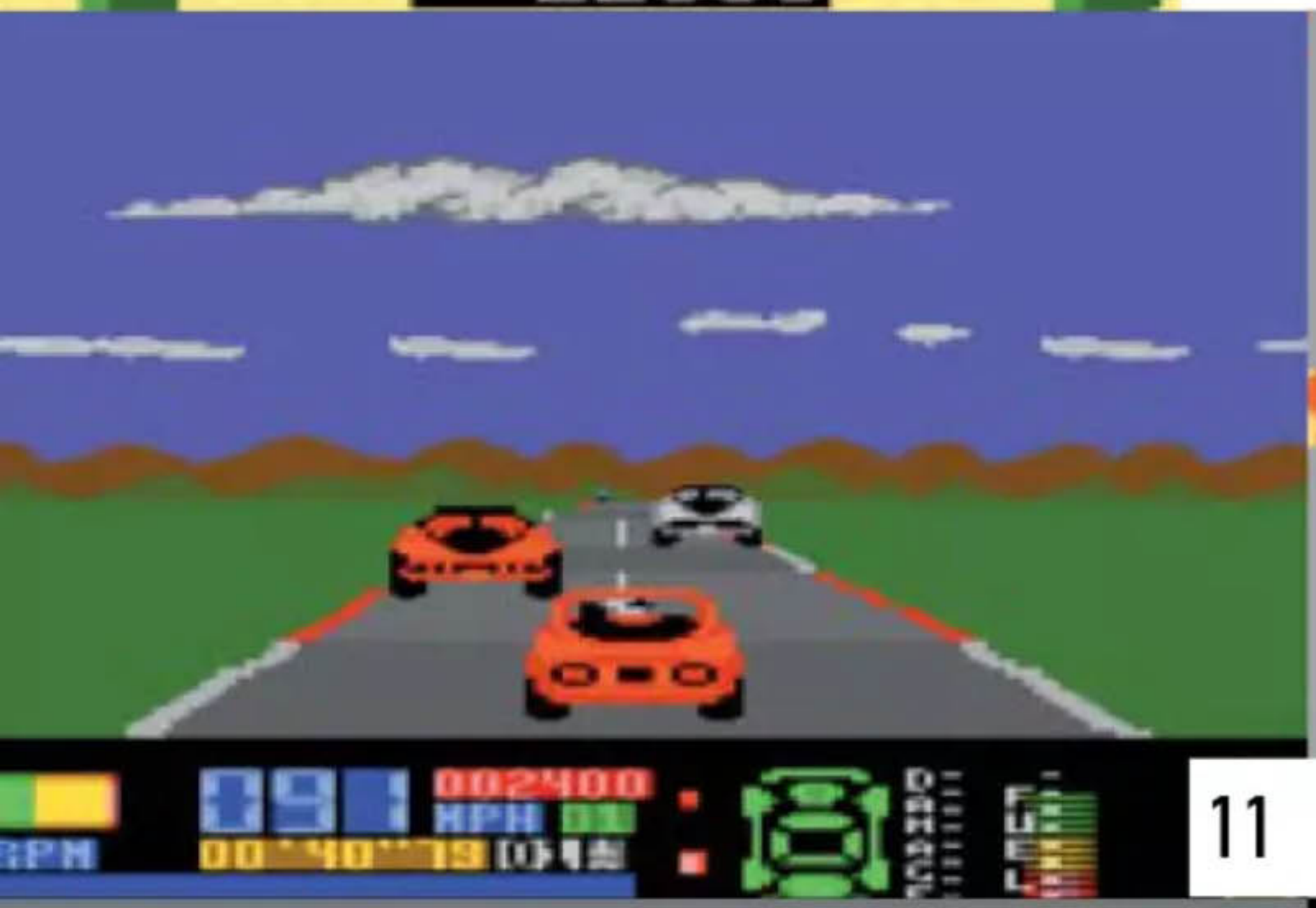

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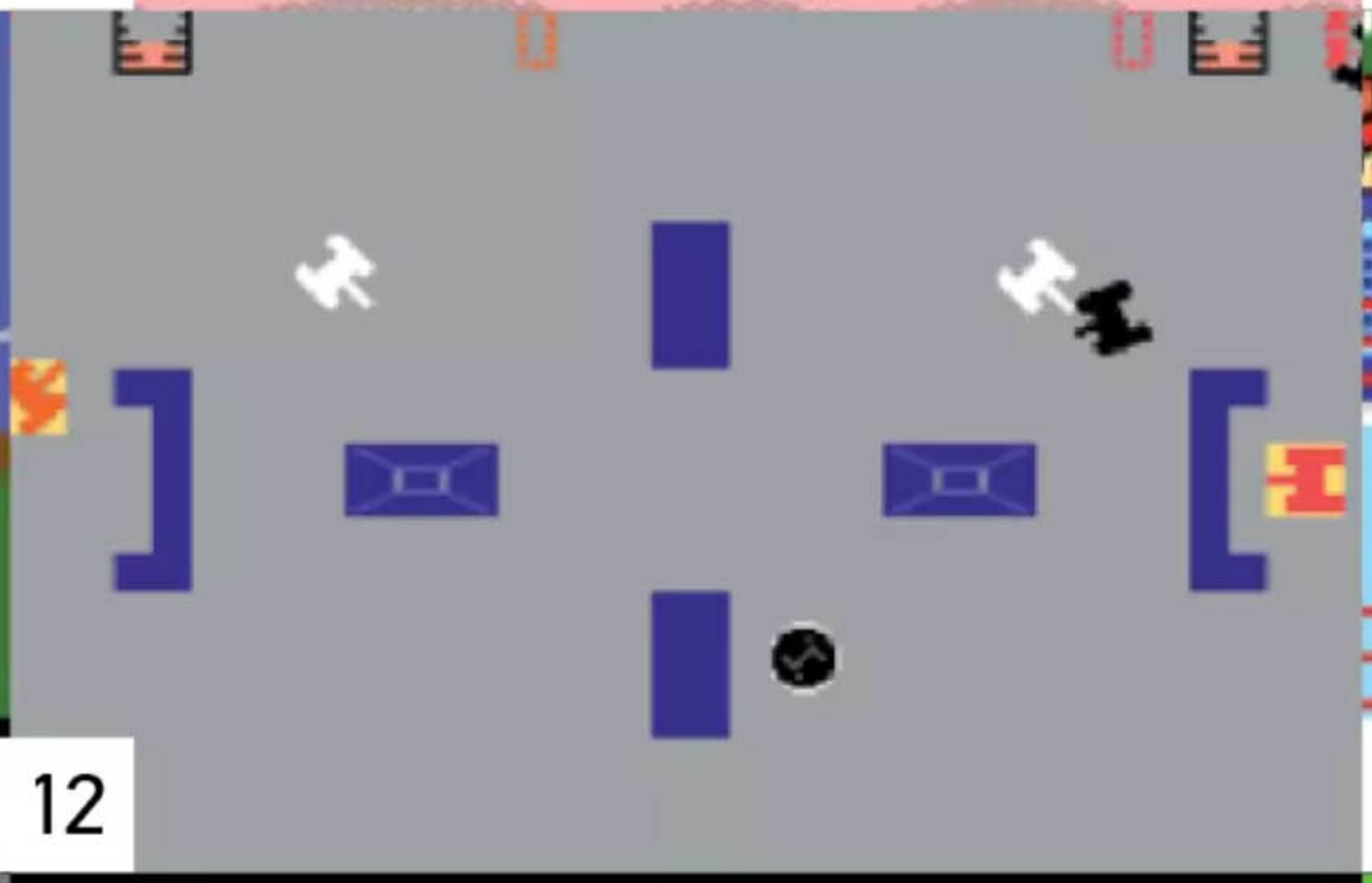

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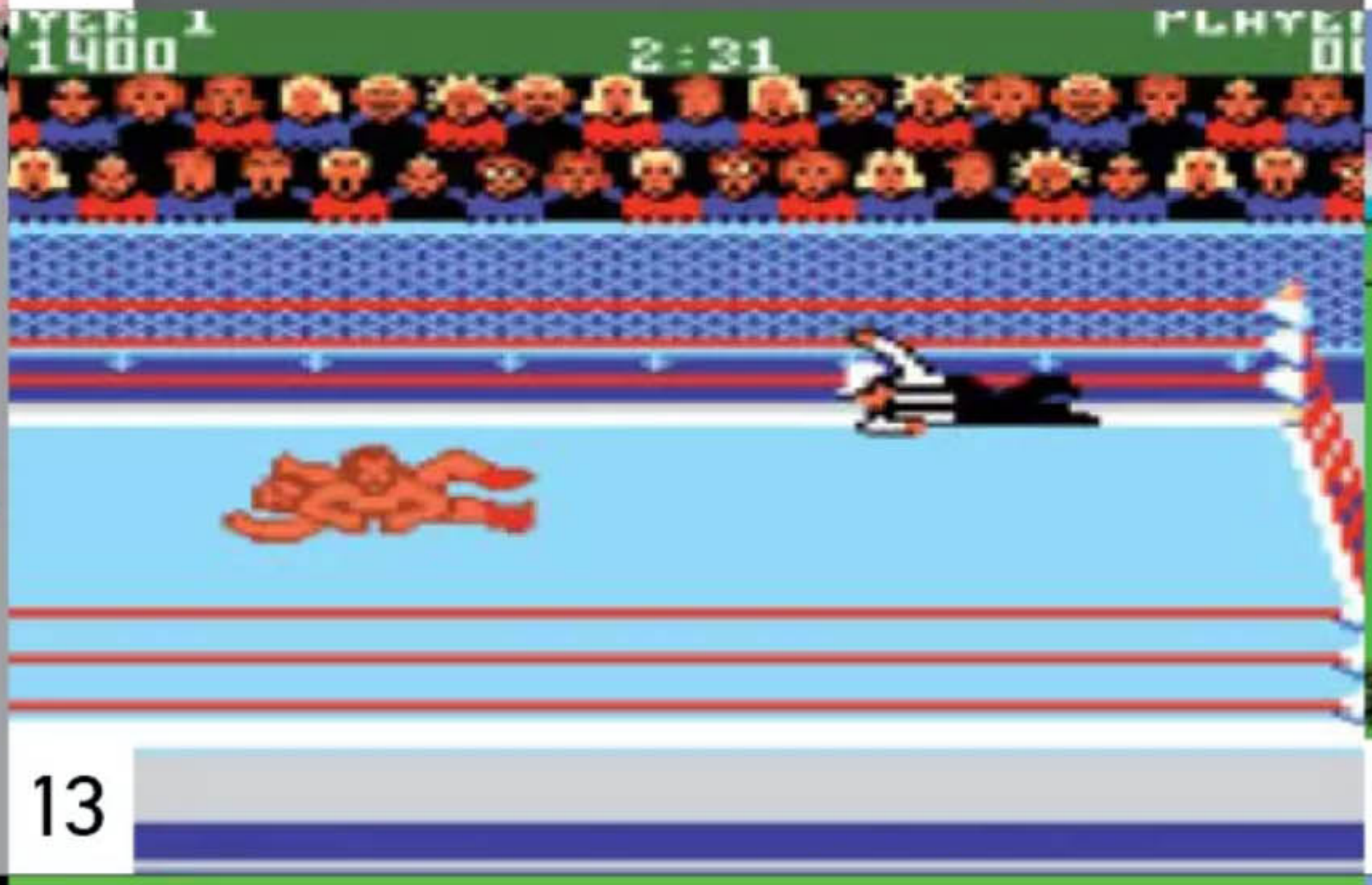

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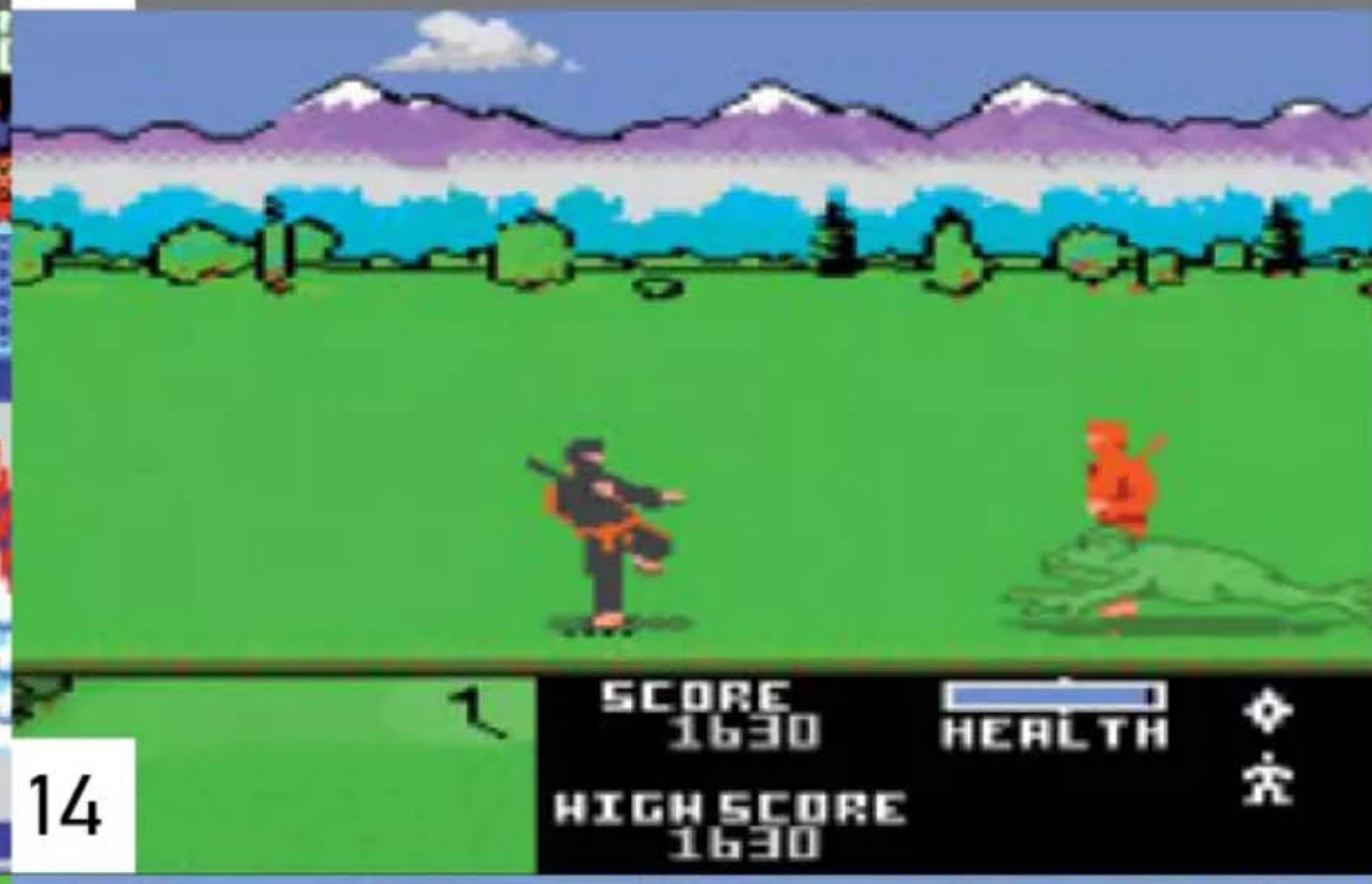
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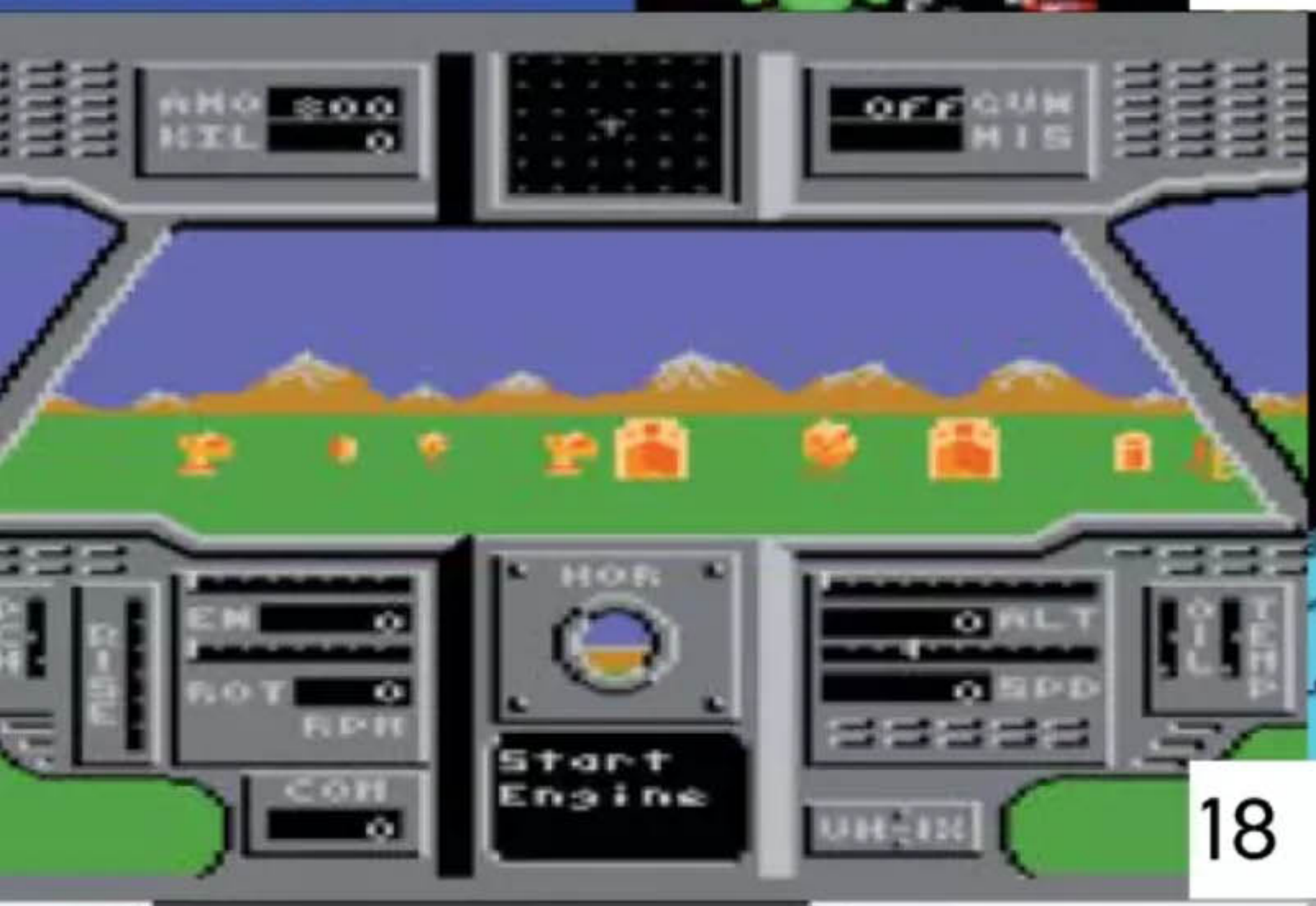
1630
HEALTH
HIGH SCORE
1630

14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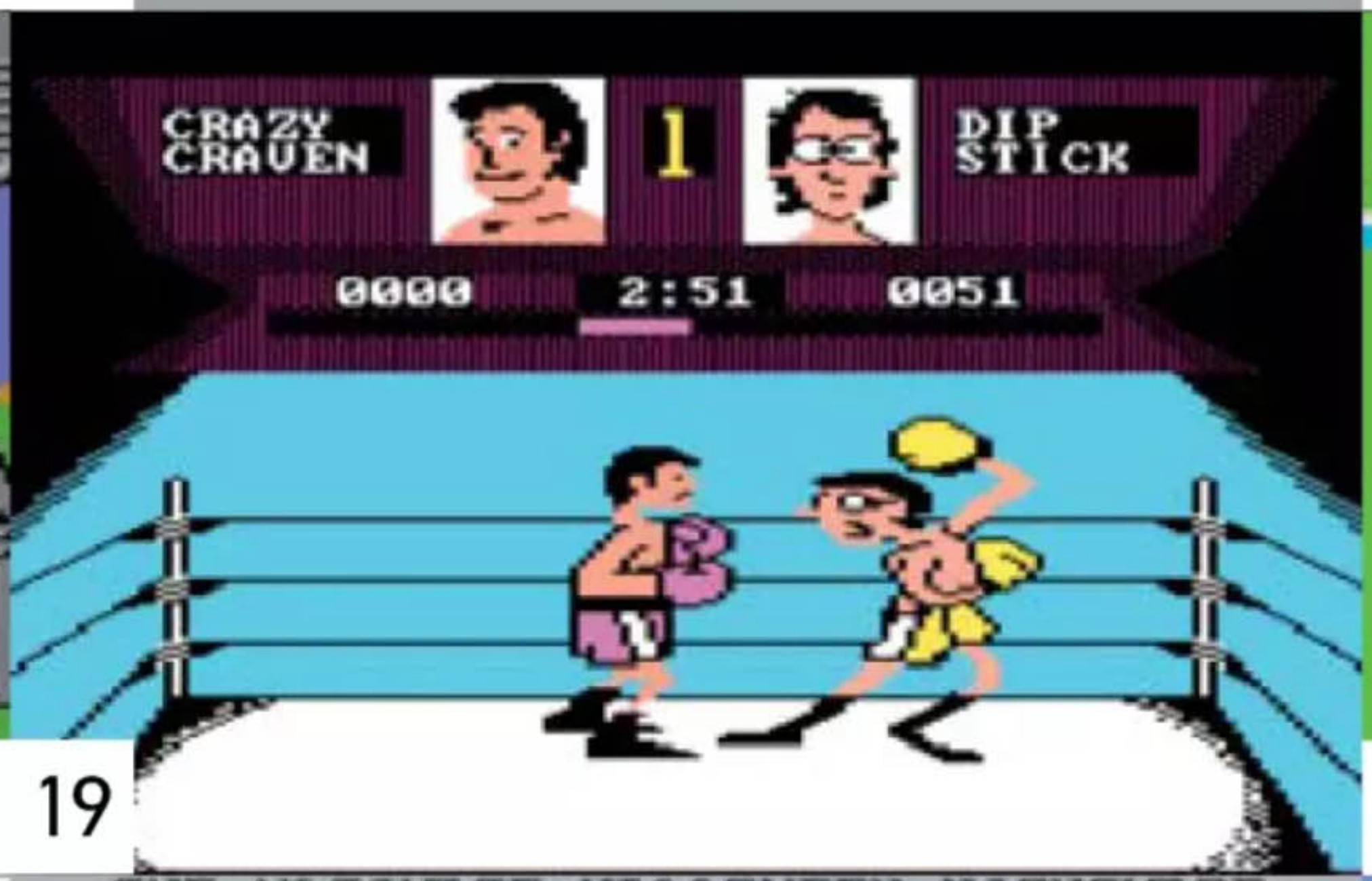
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DIP STICK
0000
2:51
0051

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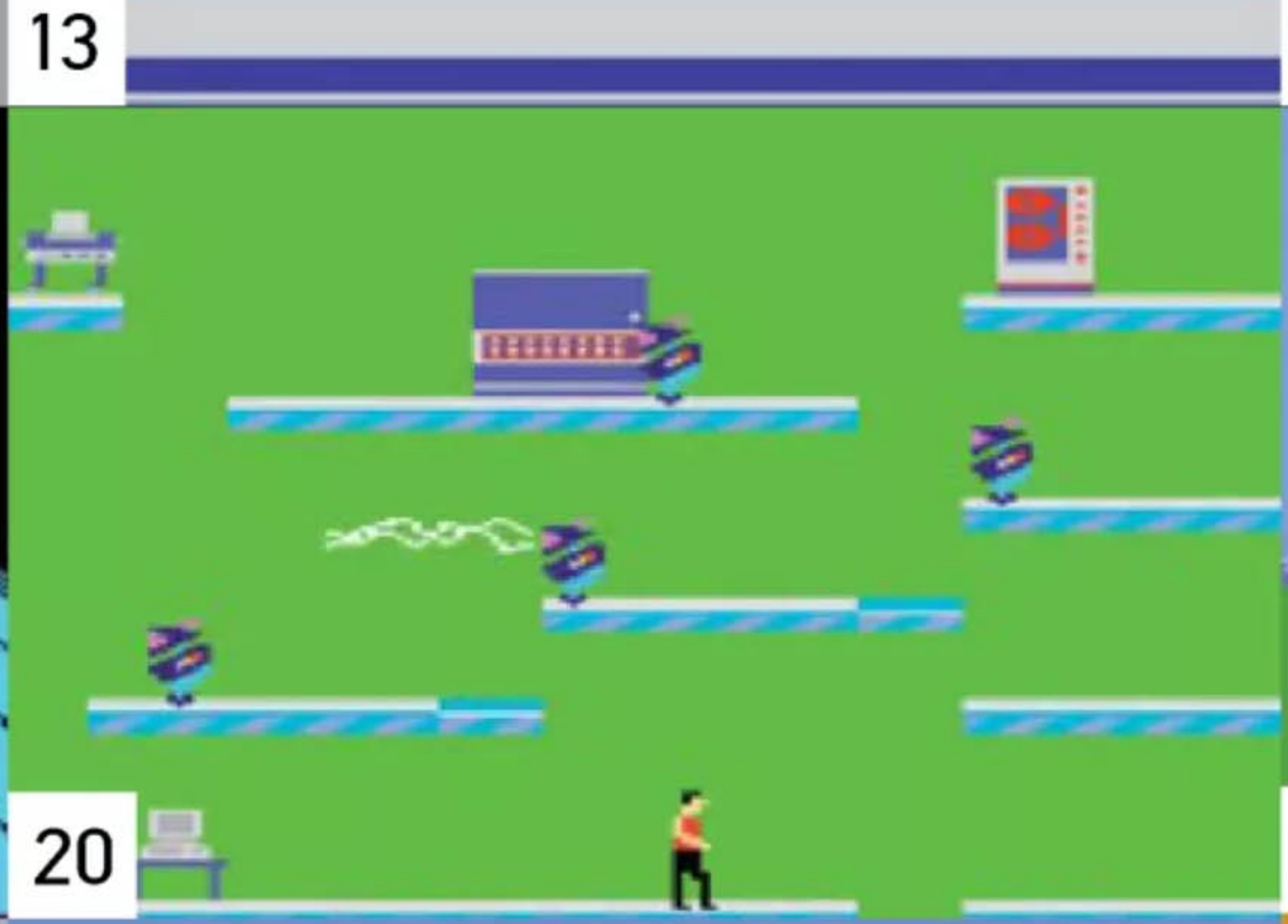

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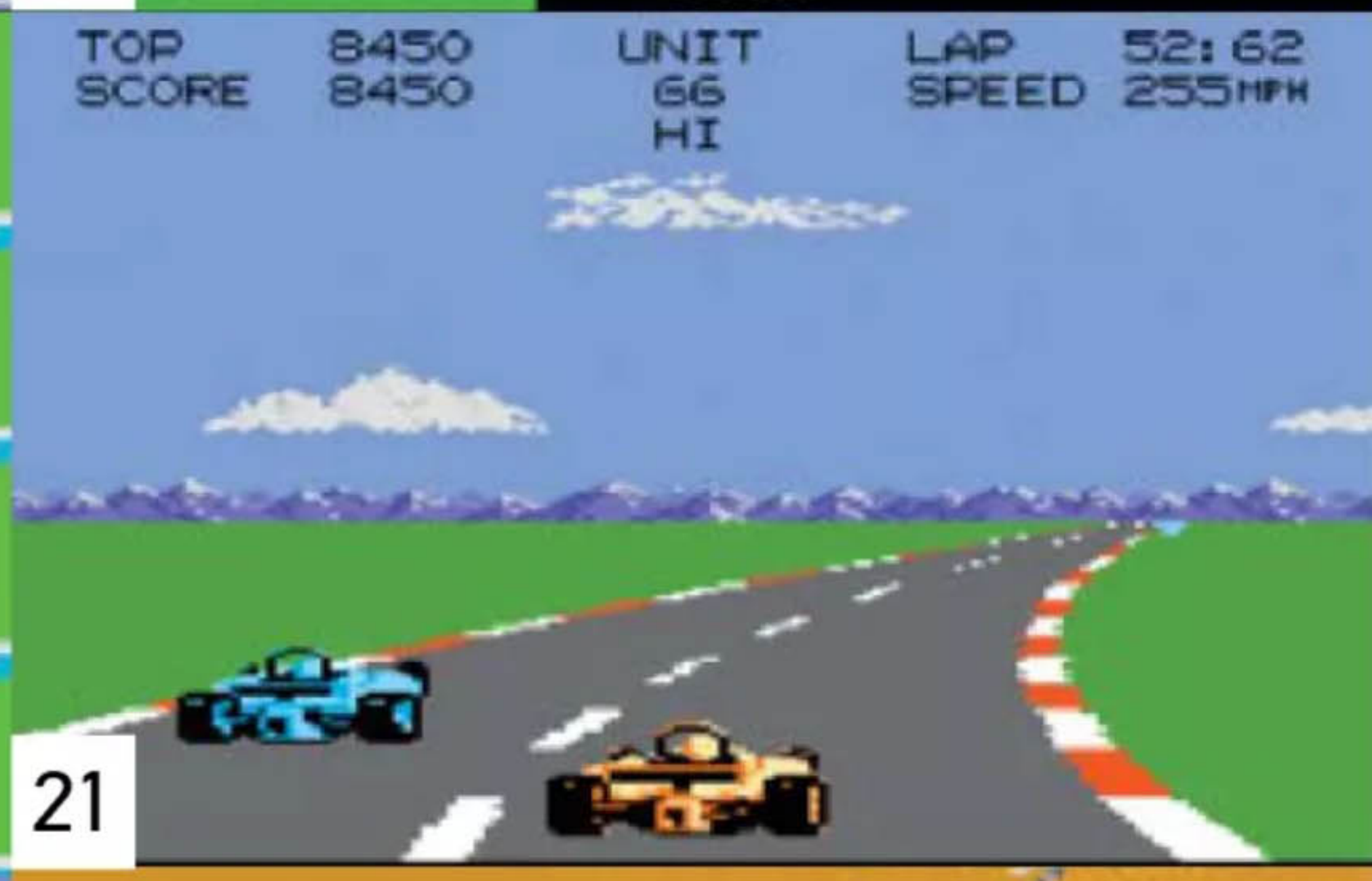
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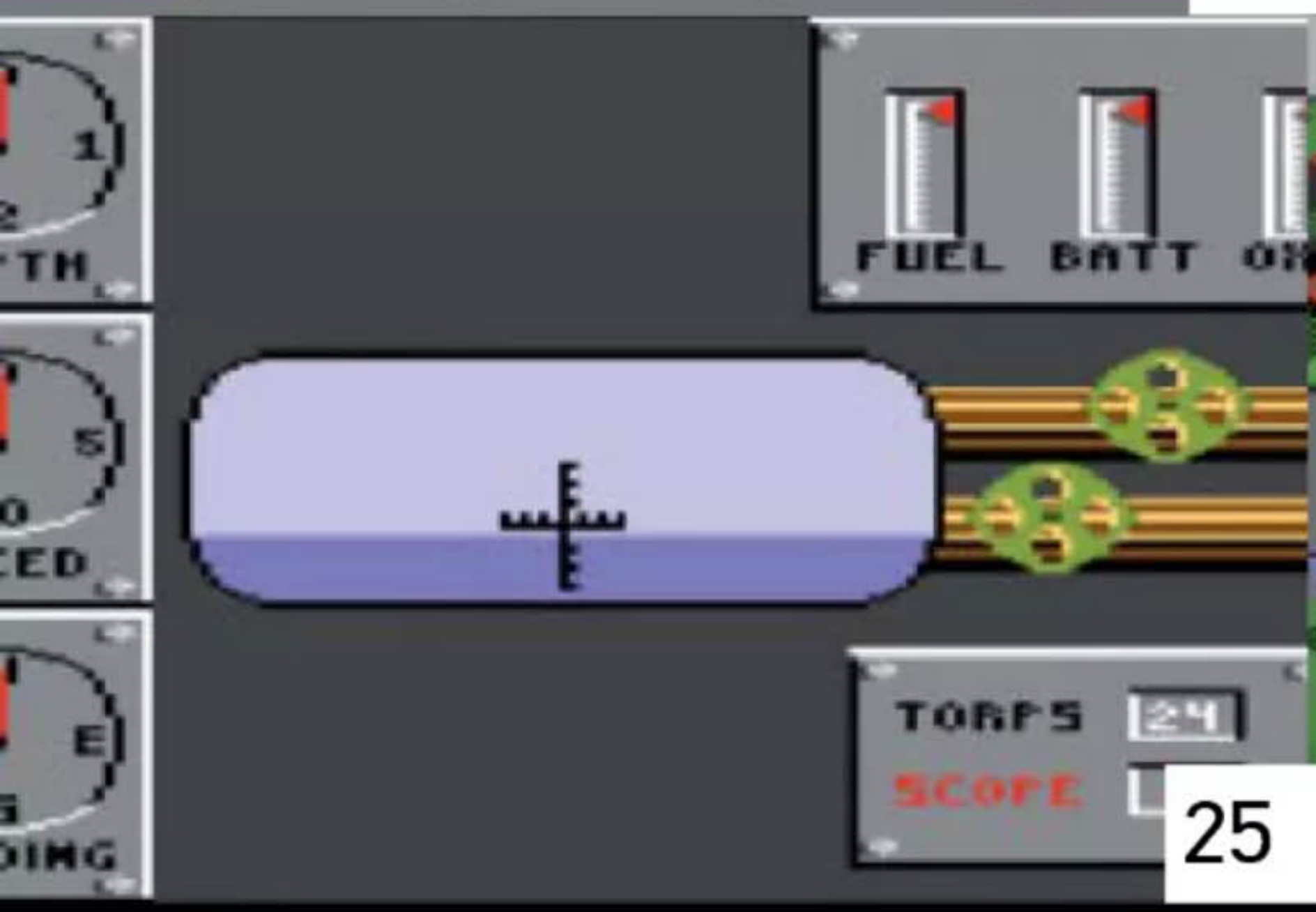
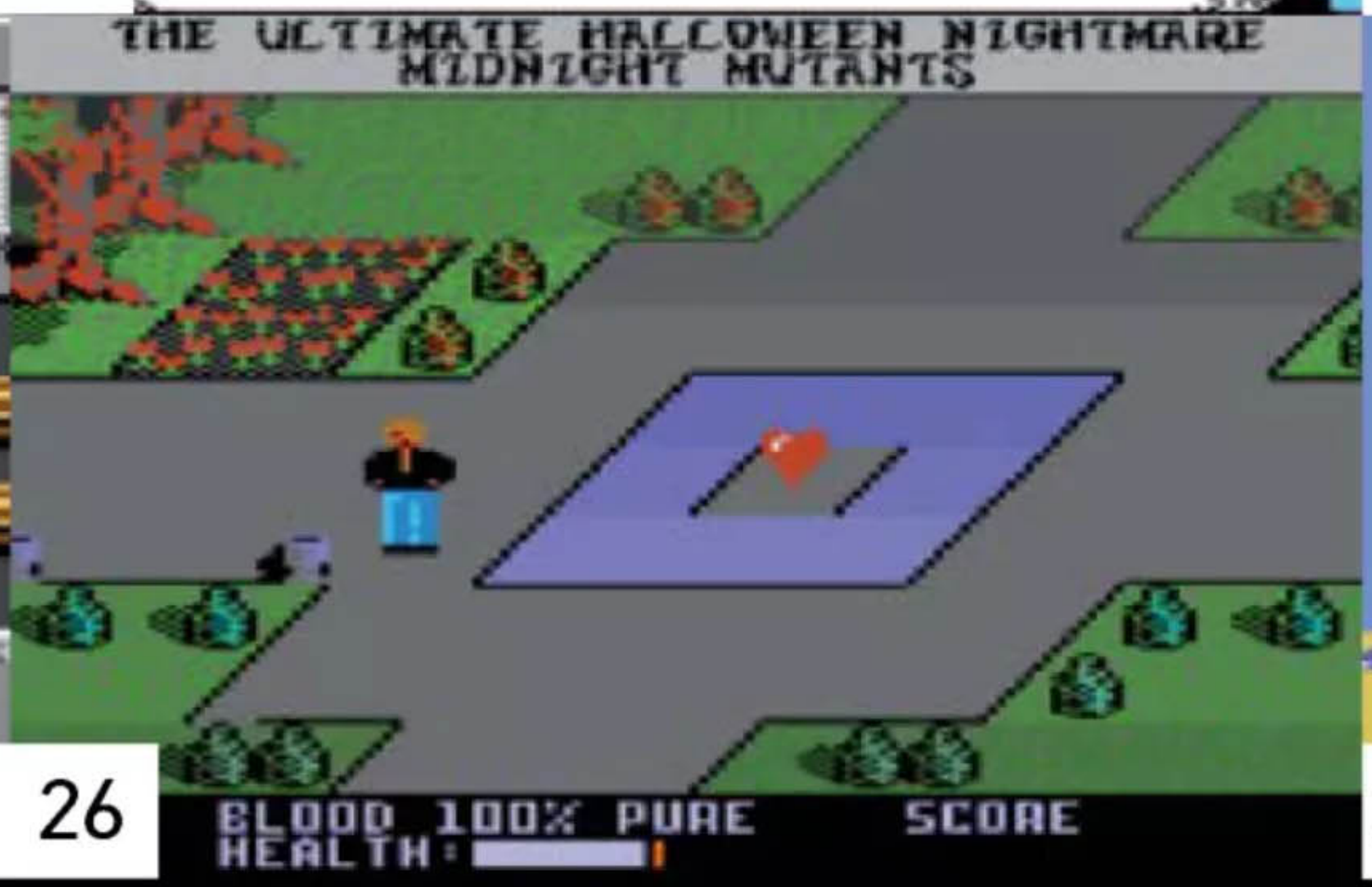
SCORE 8450
UNIT 66 HI
LAP 52:62
SPEED 255MPH

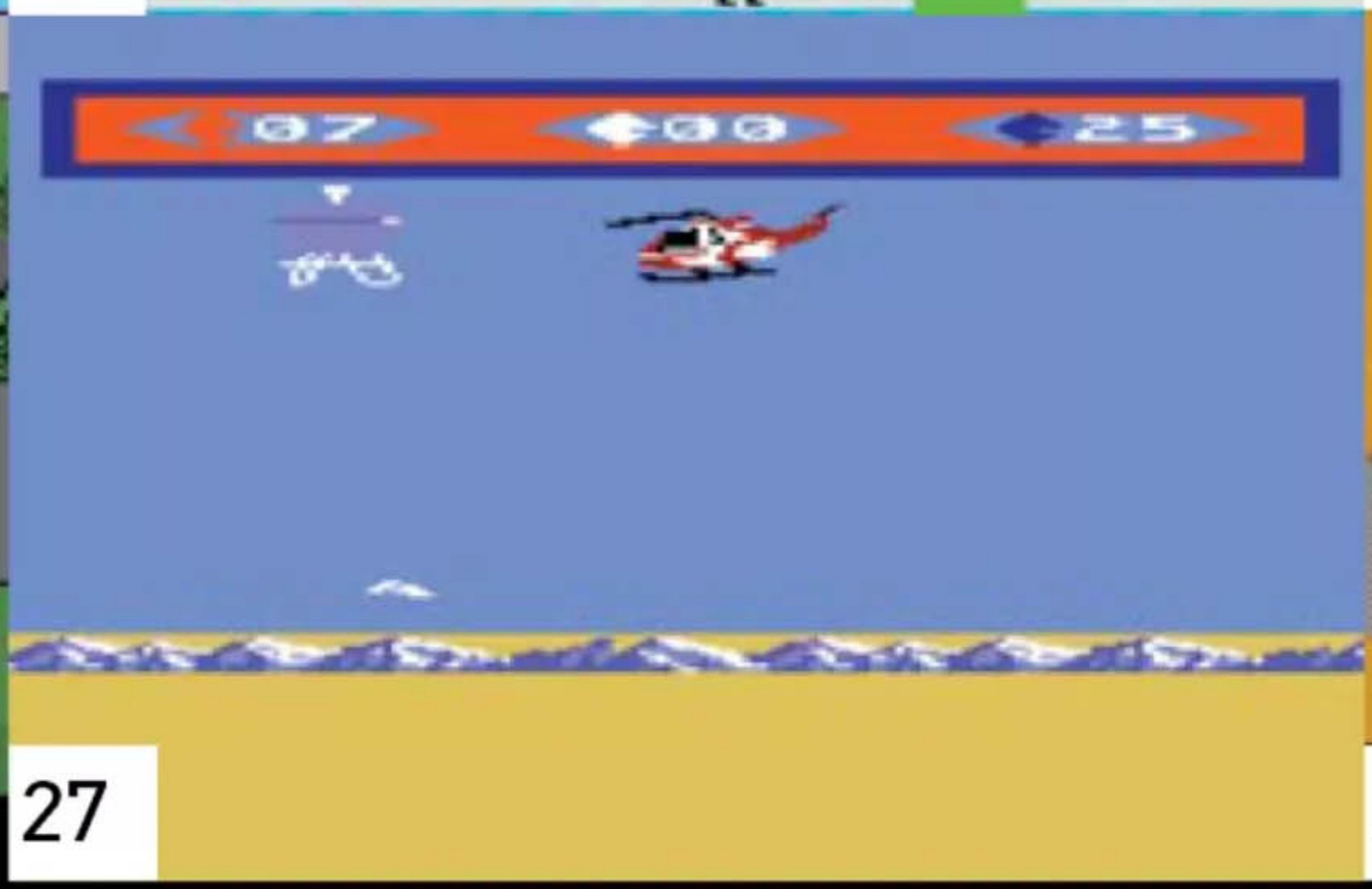
21


FUEL
BATT
TORPS
SCORE

25


THE ULTIMATE HALLOWEEN NIGHTMARE
MIDNIGHT MUTANTS
BLOOD 100% PURE
HEALTH
SCORE

26



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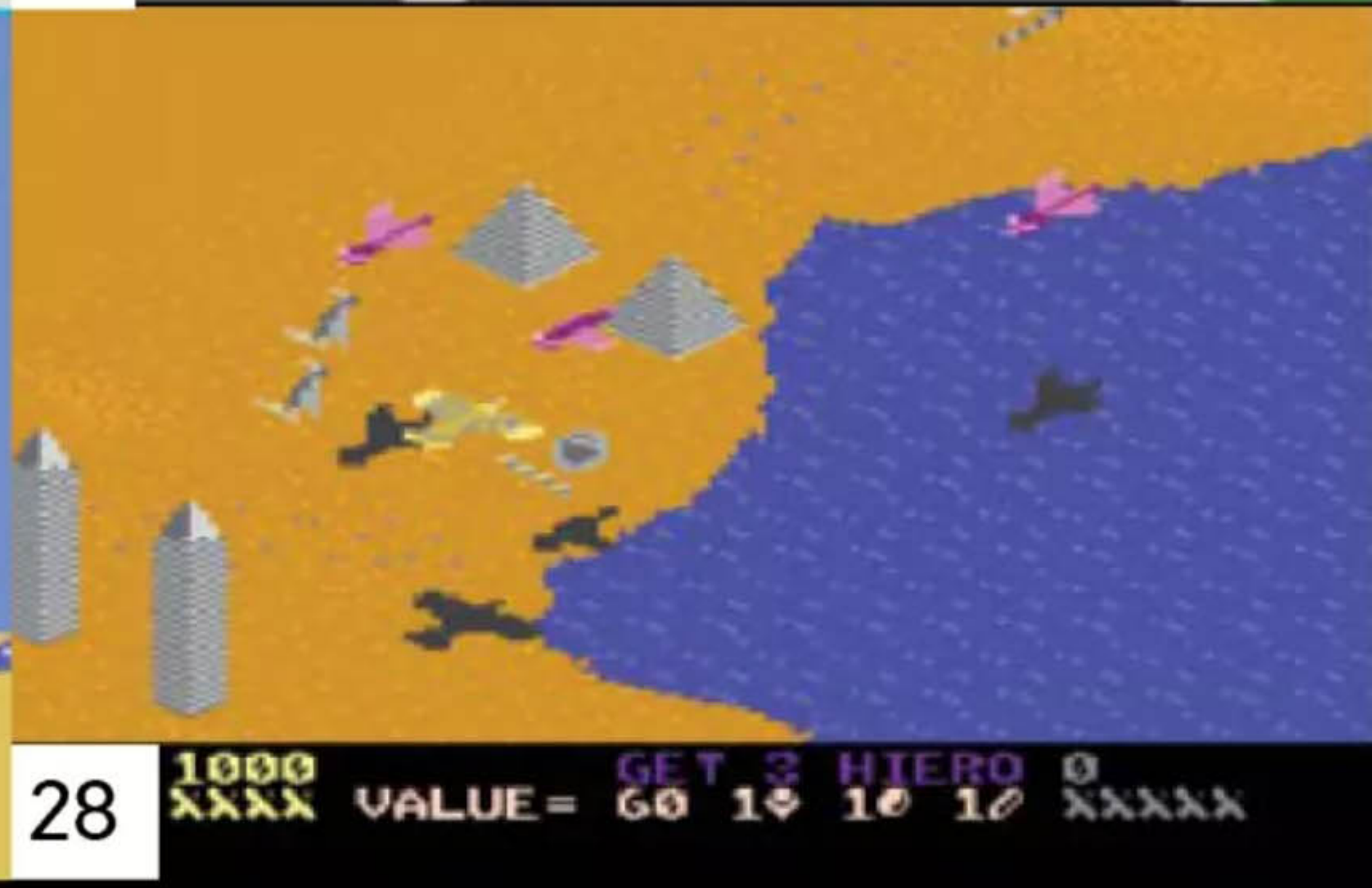
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GET 3 HIERO 0

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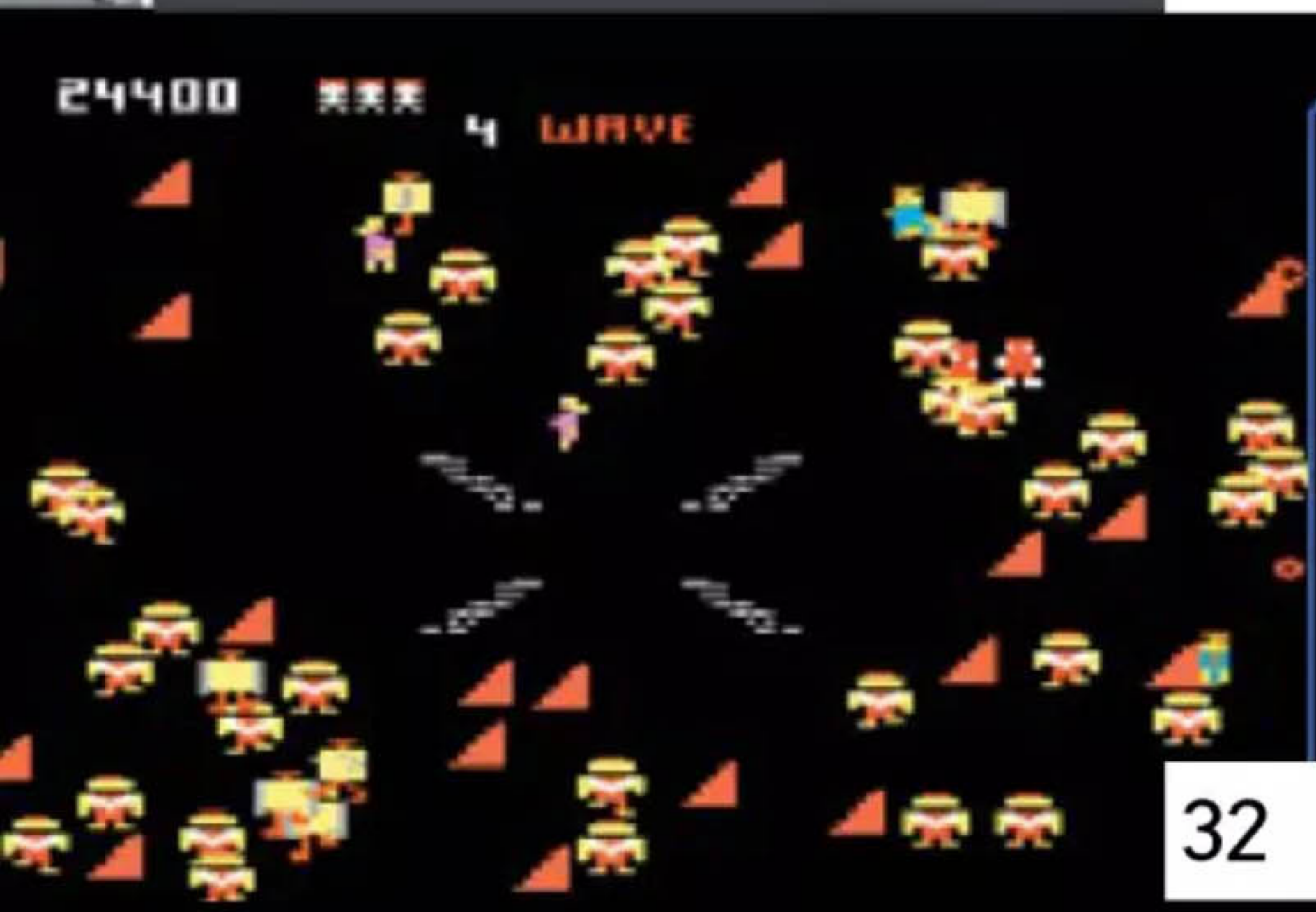
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4 WAVE

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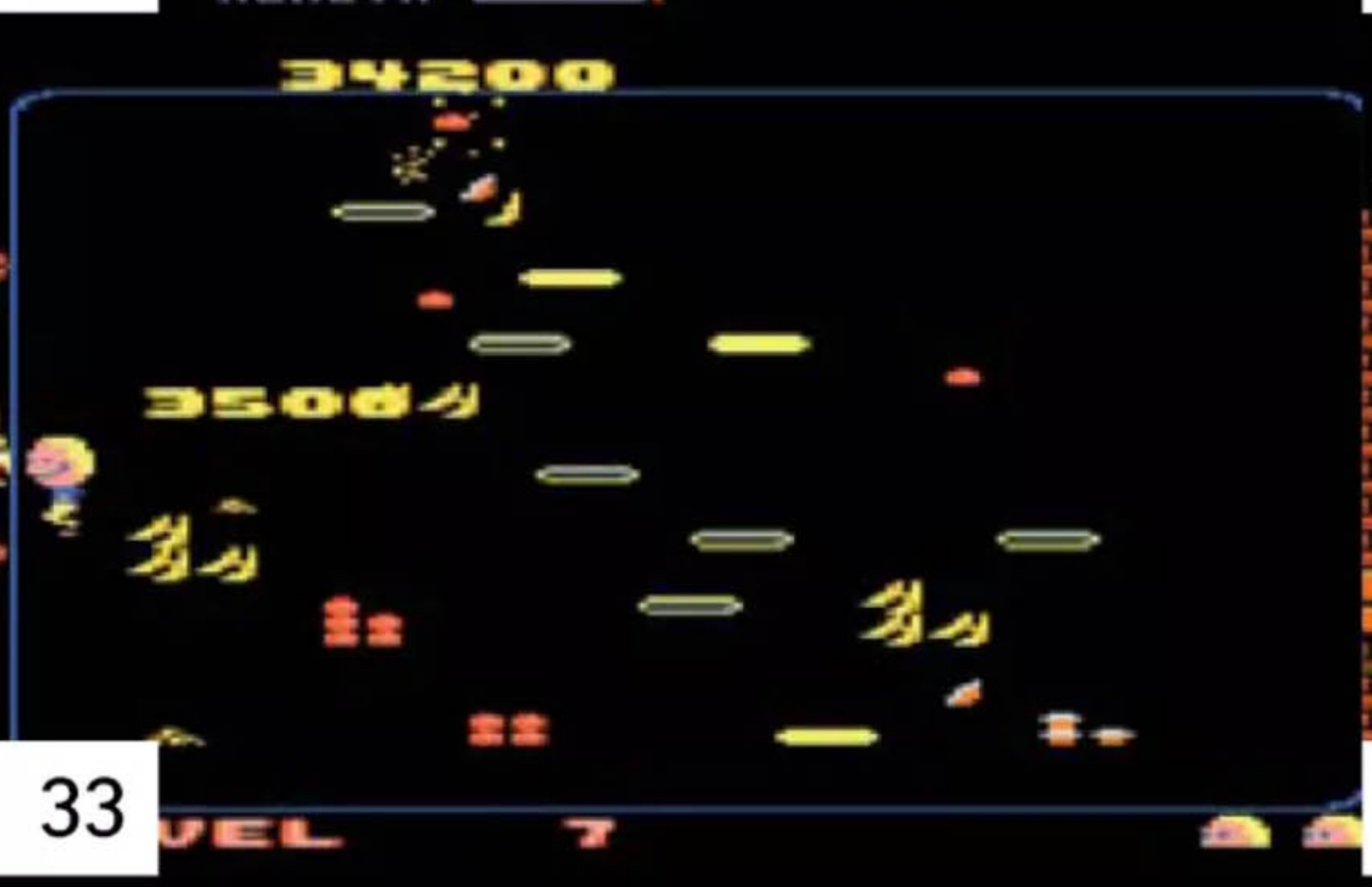
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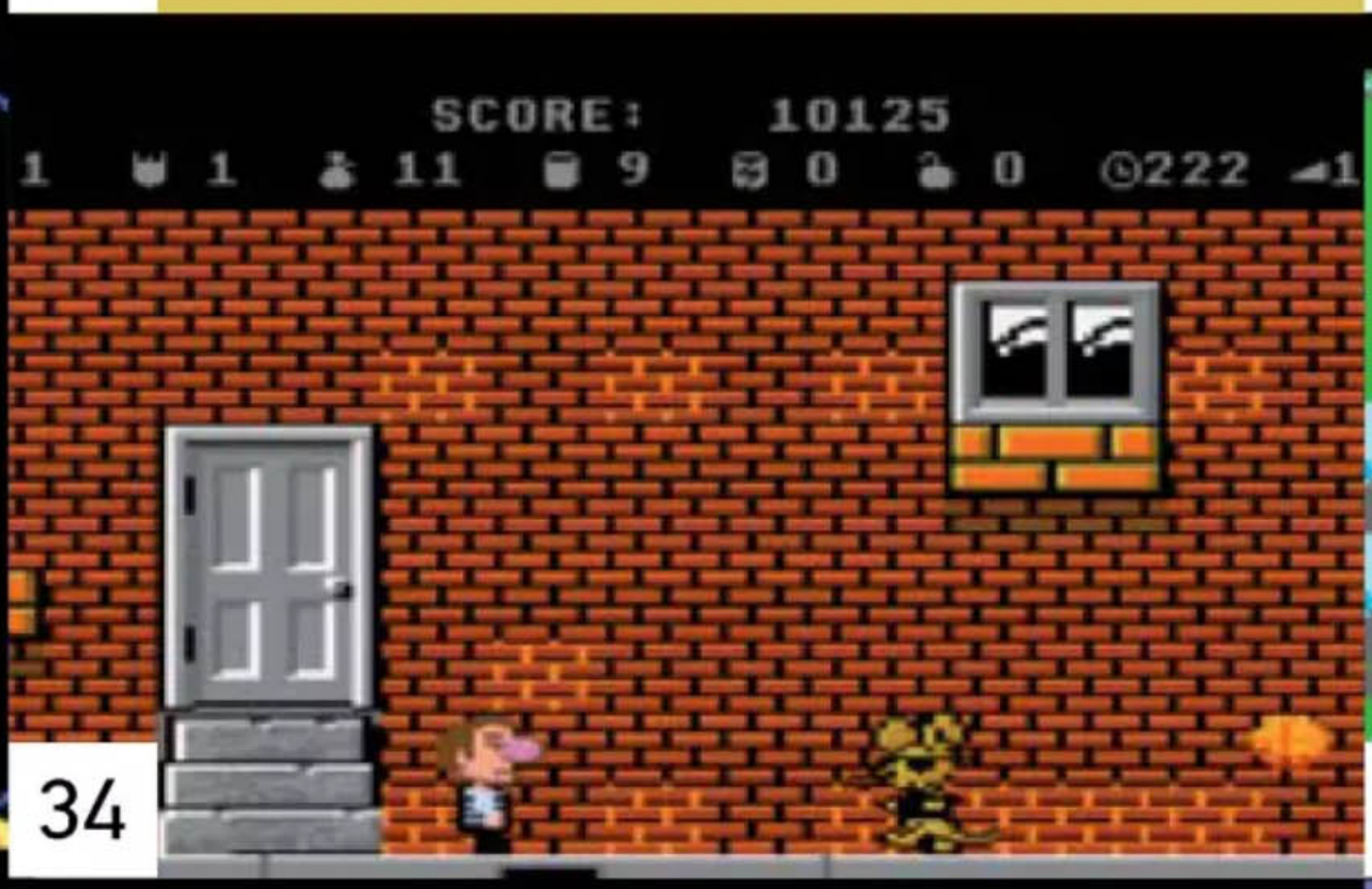
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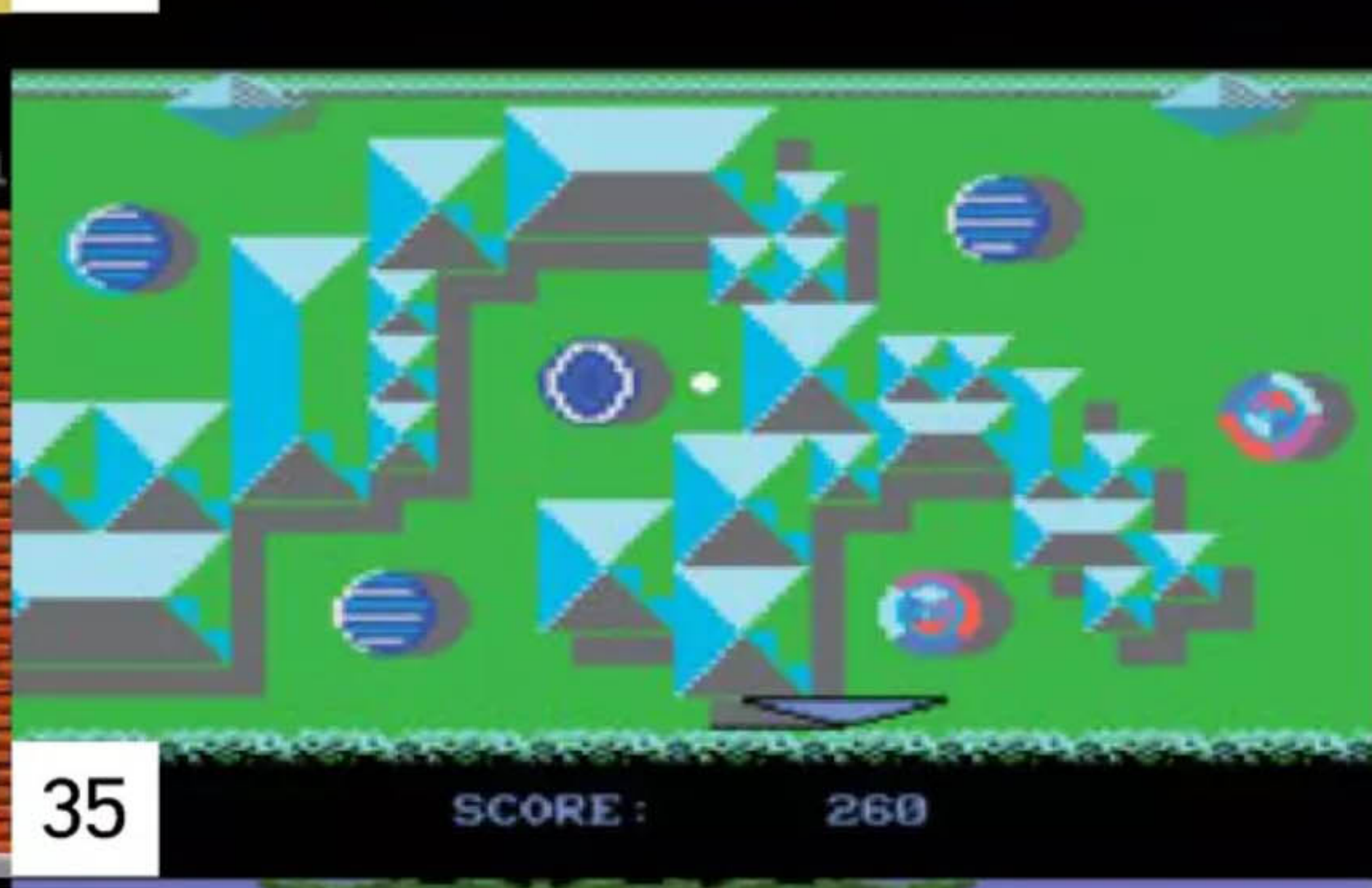

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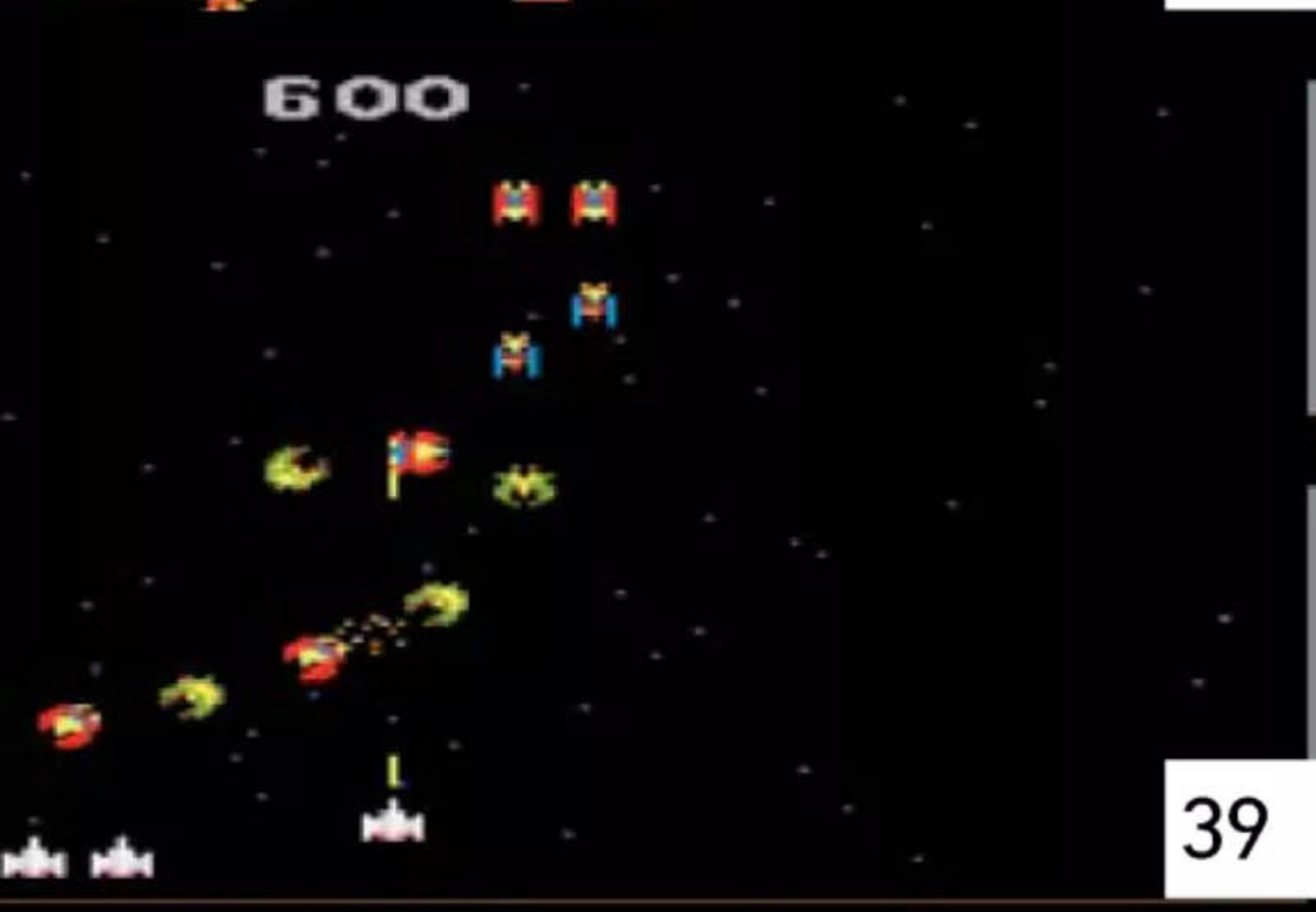

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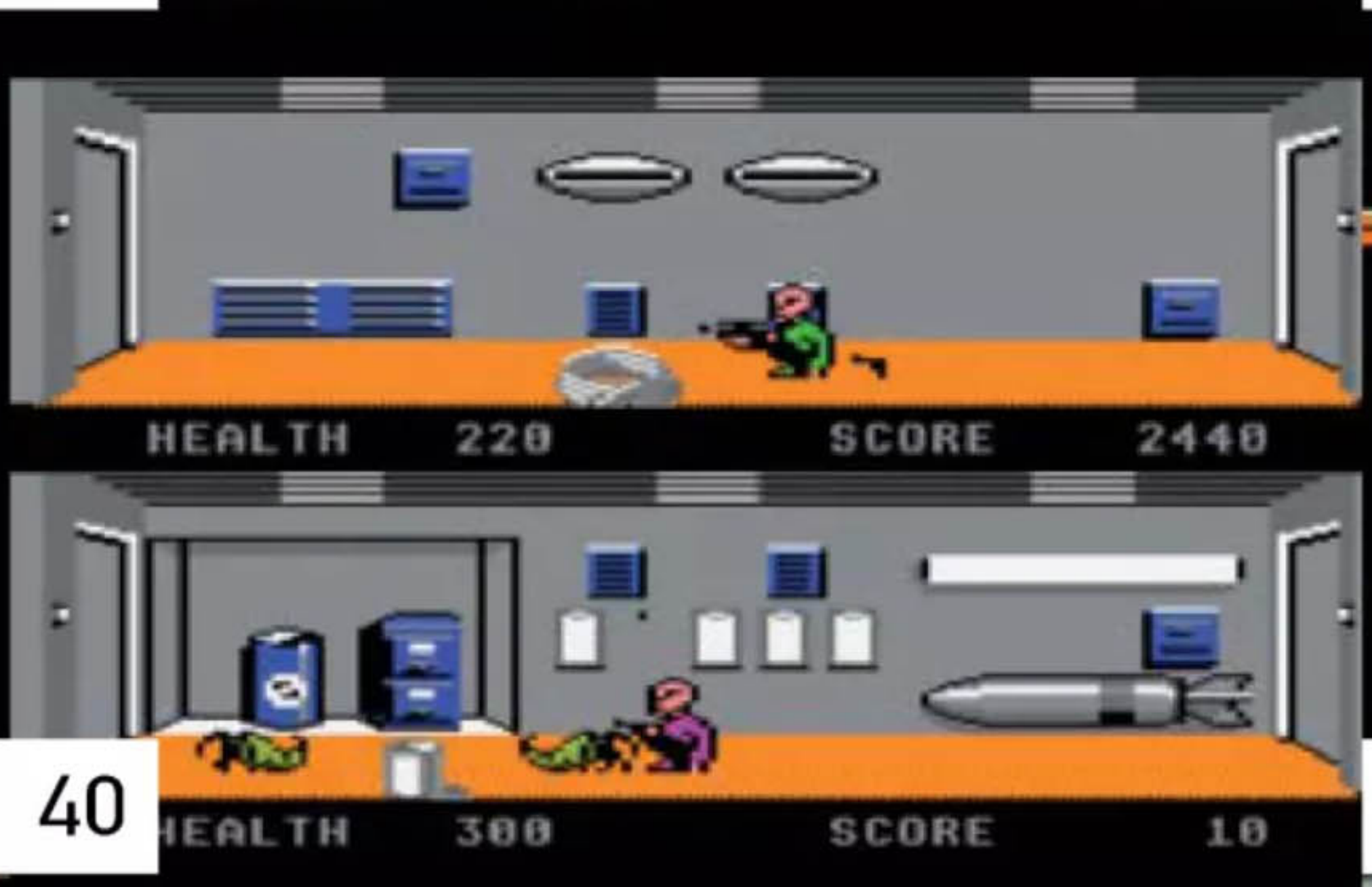
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SCORE 2440
HEALTH 300
SCORE 10

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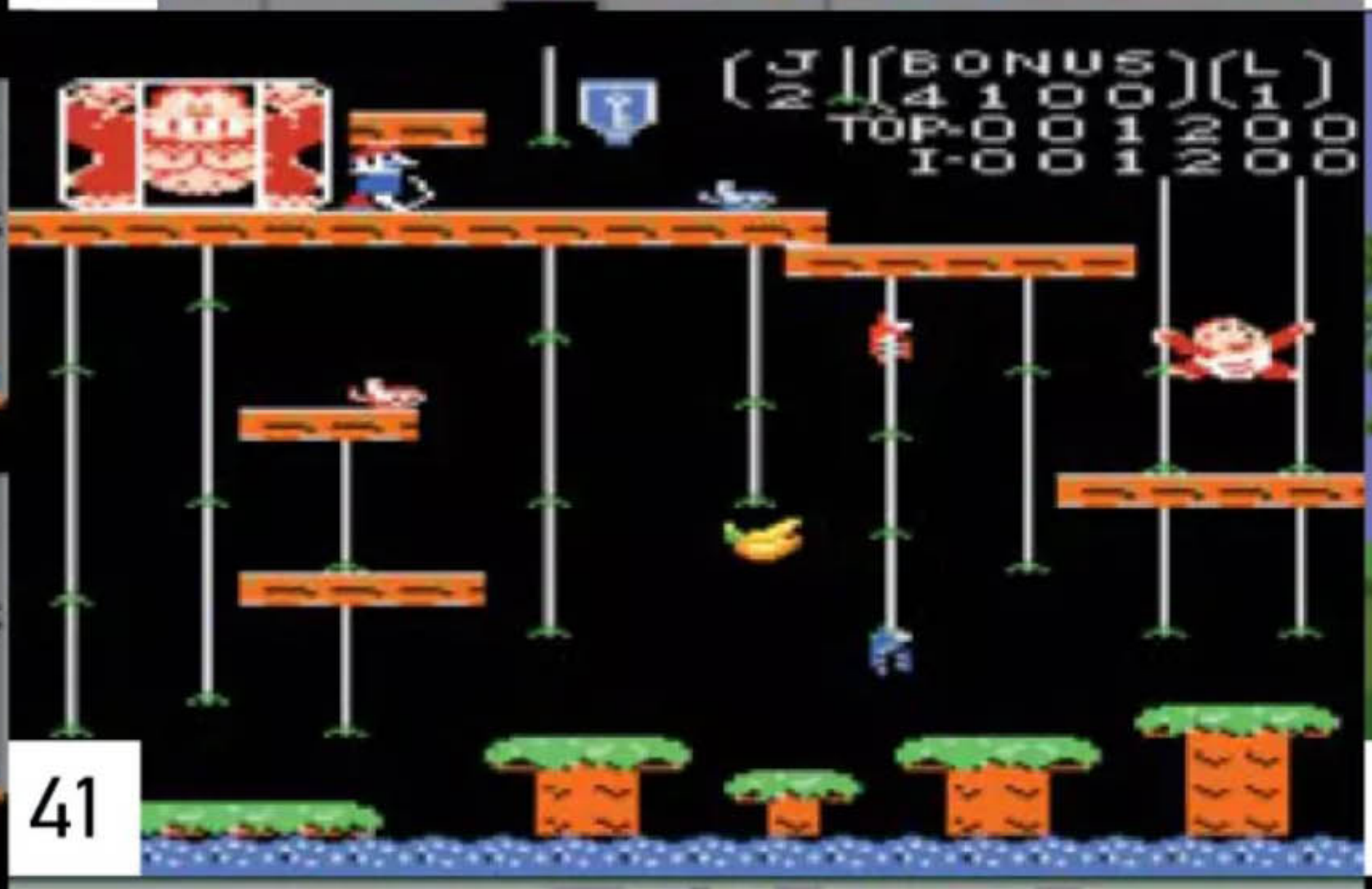
BONUS
TOP-001200
I-001200

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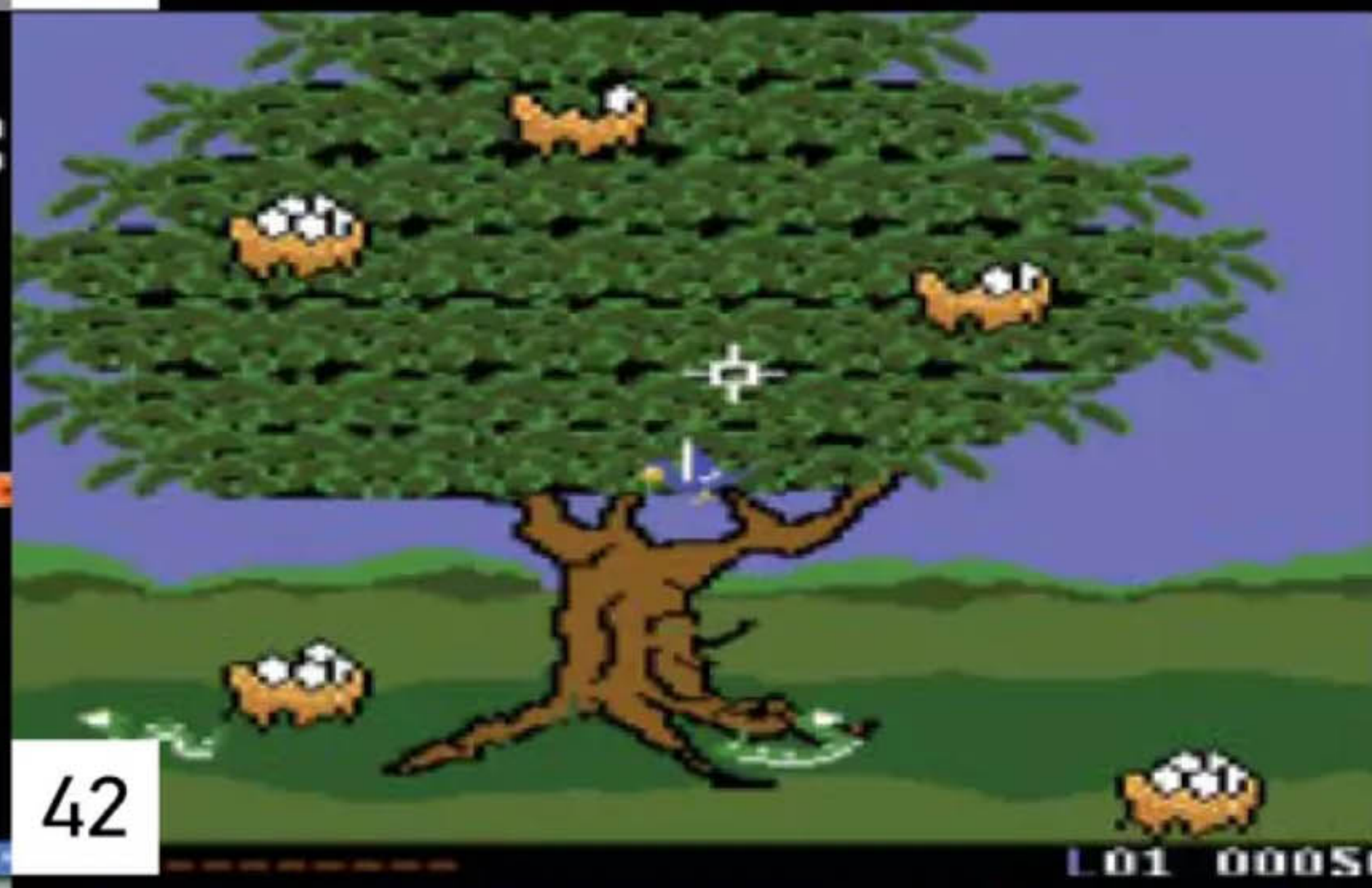

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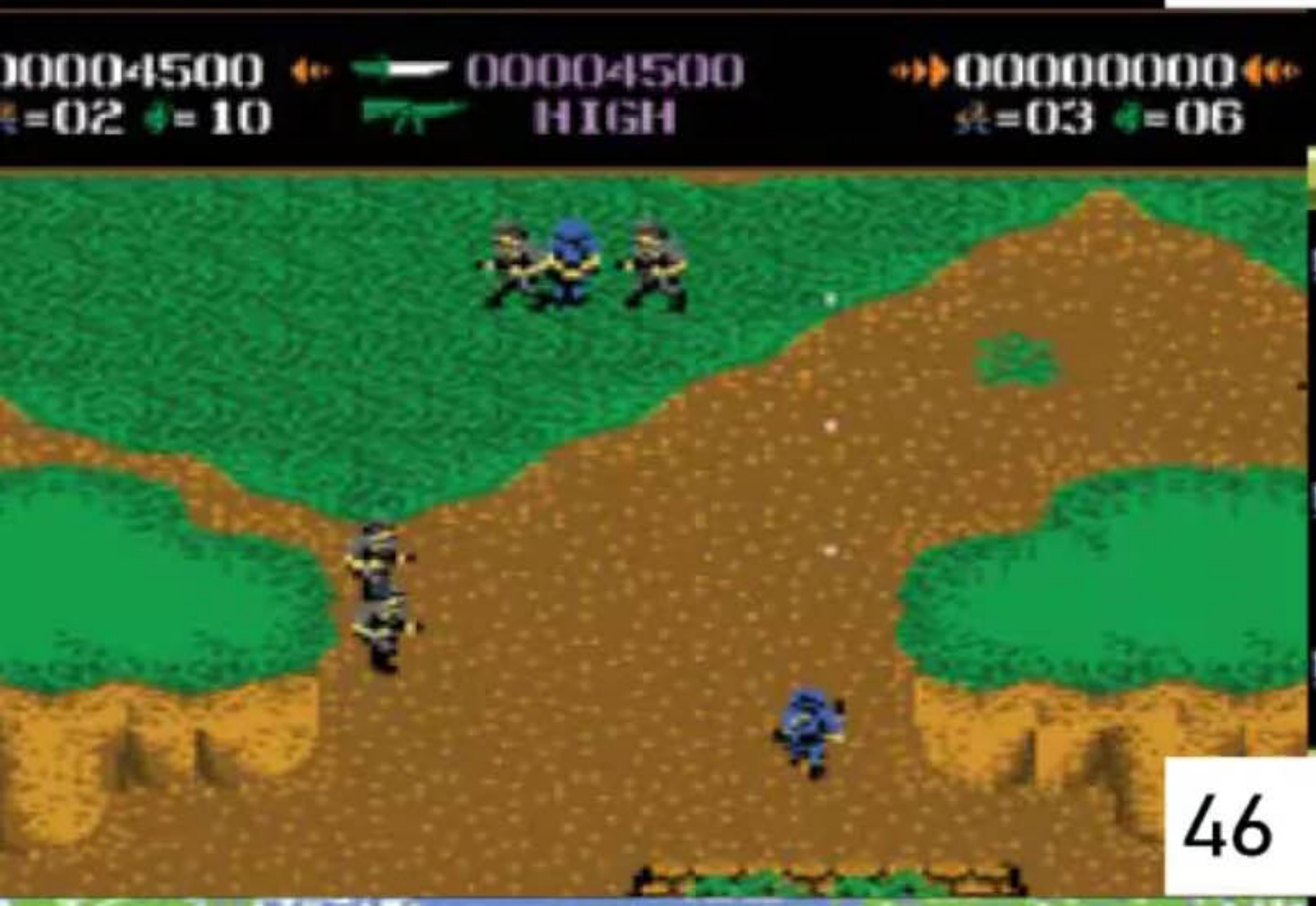
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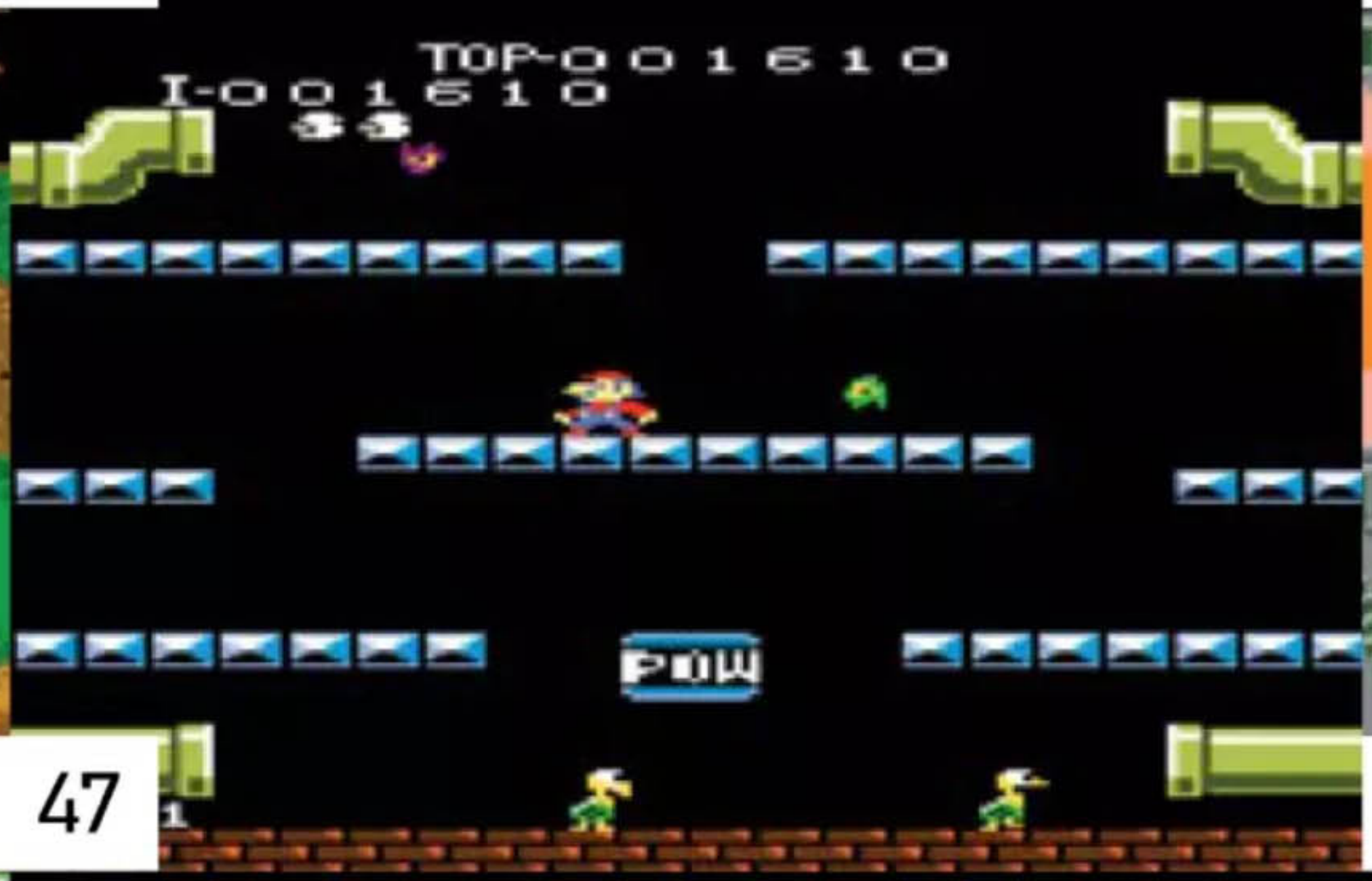
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I-001610
POW

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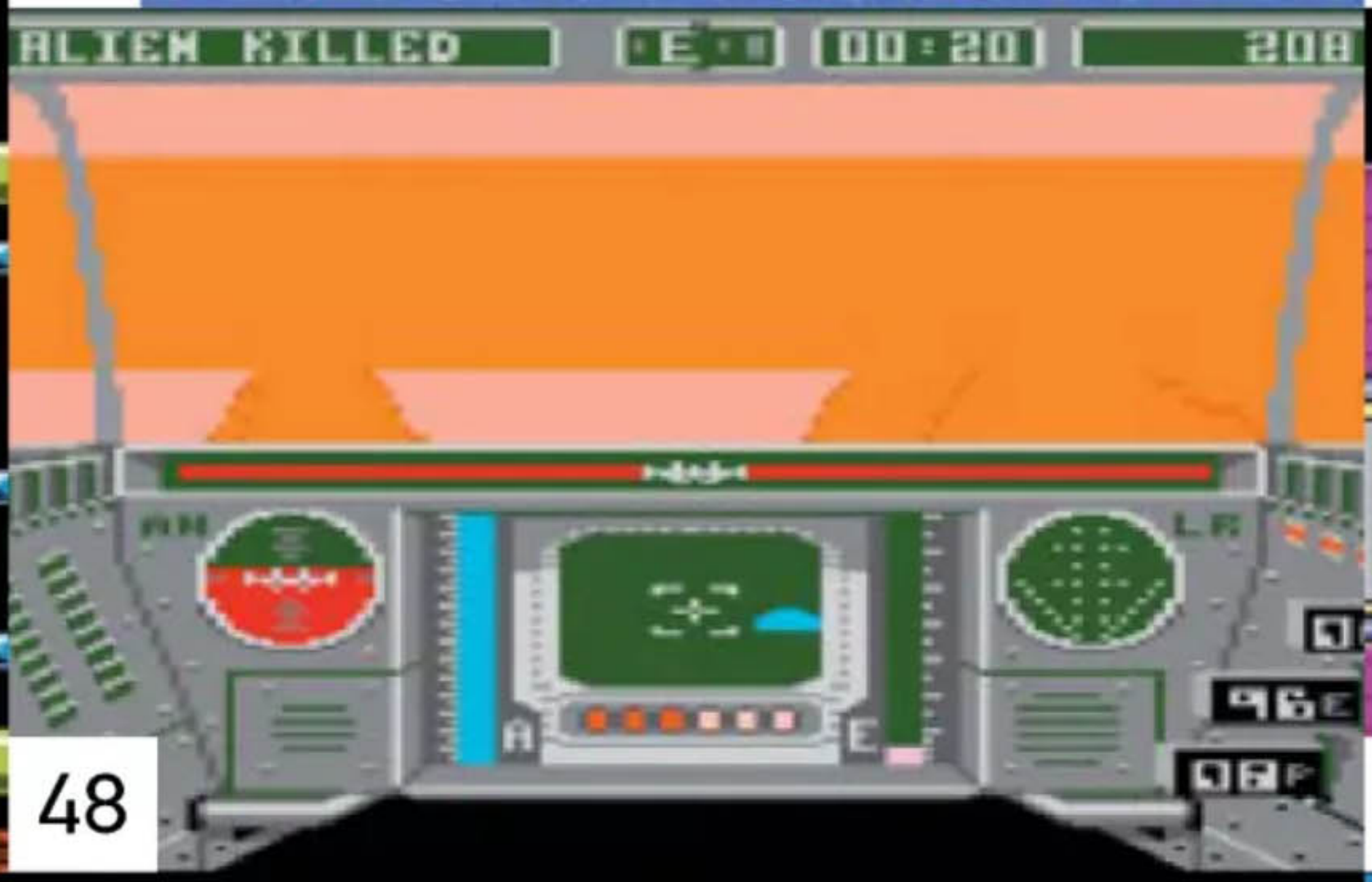
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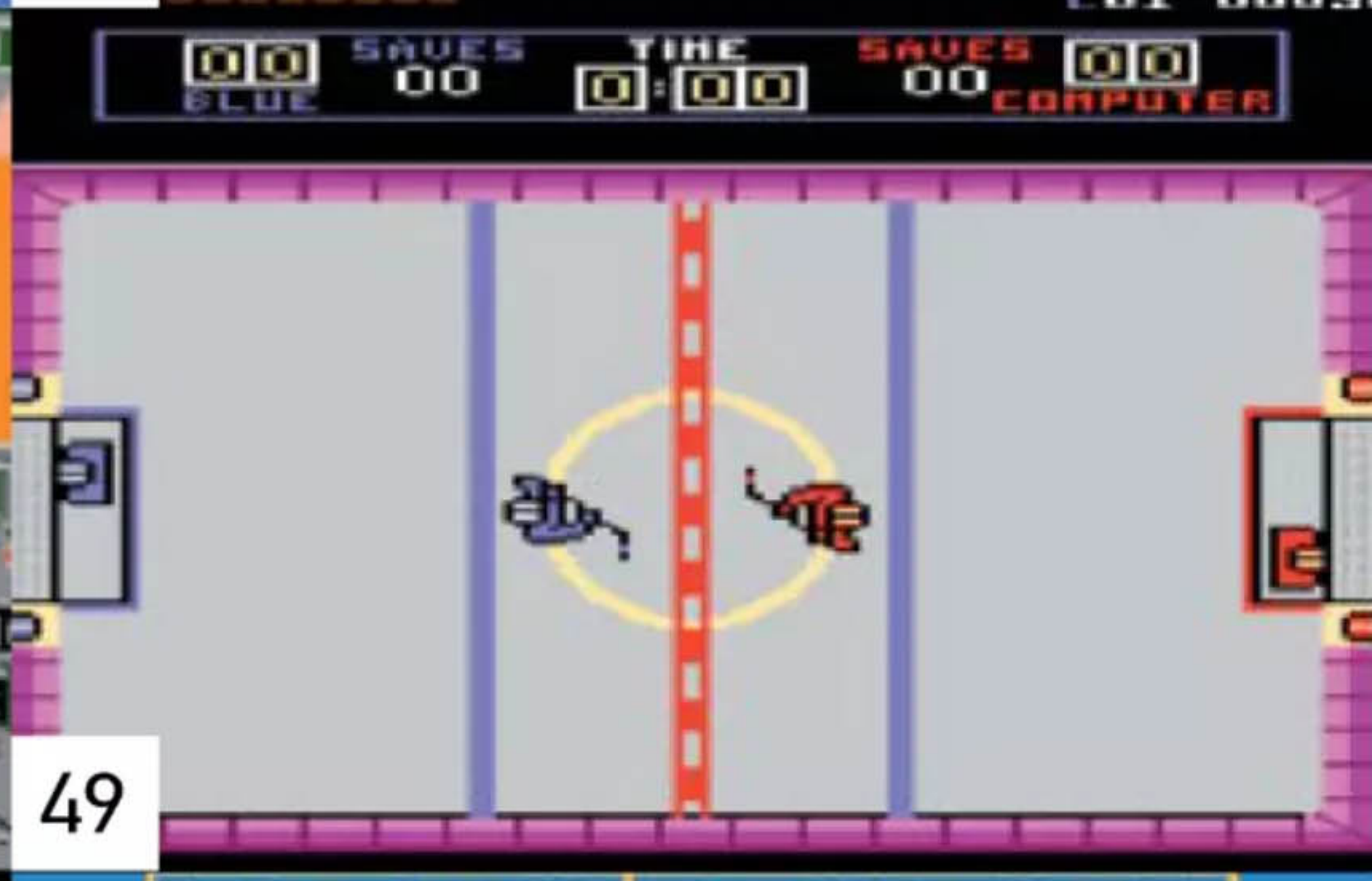
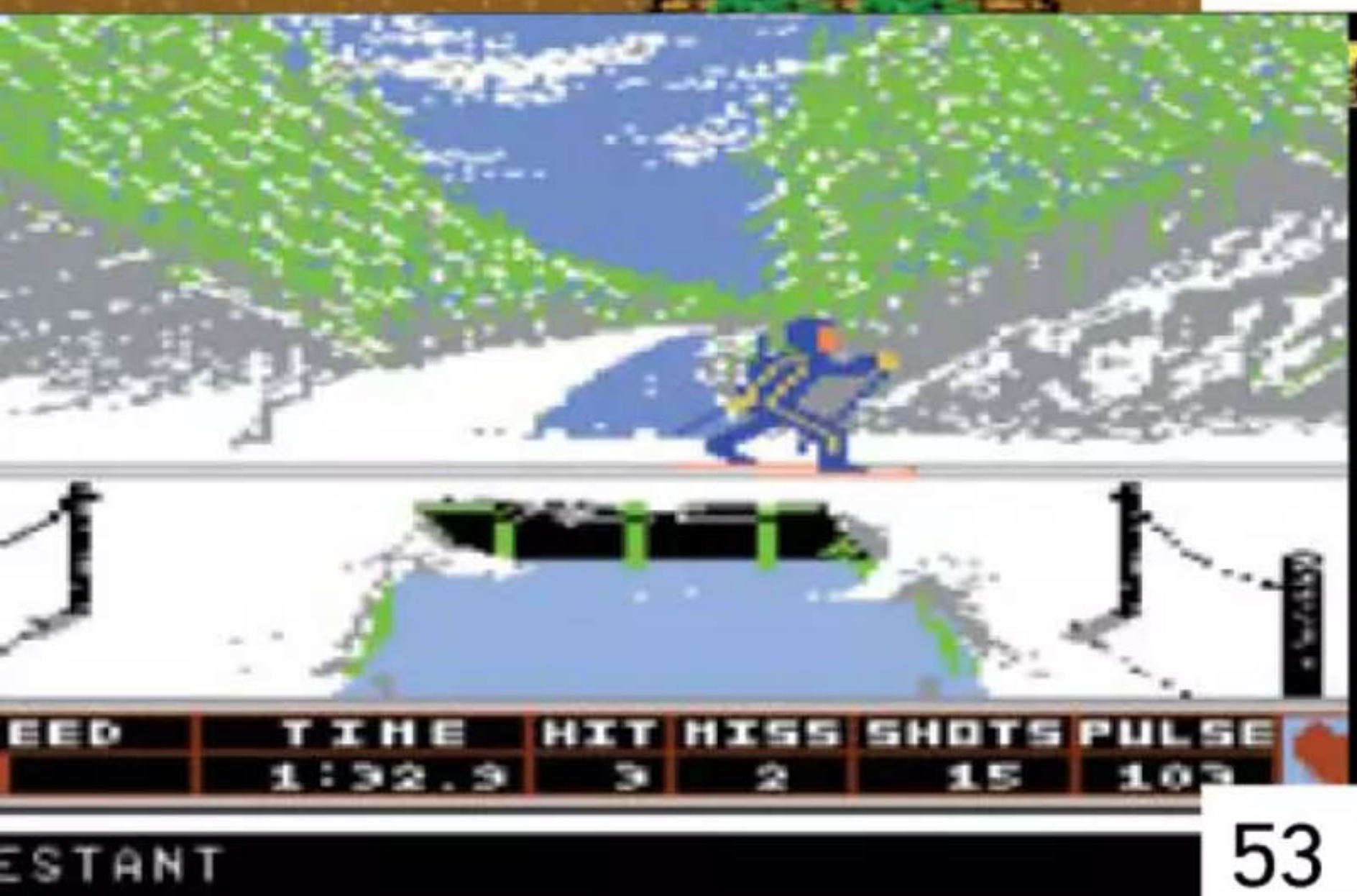
00:20

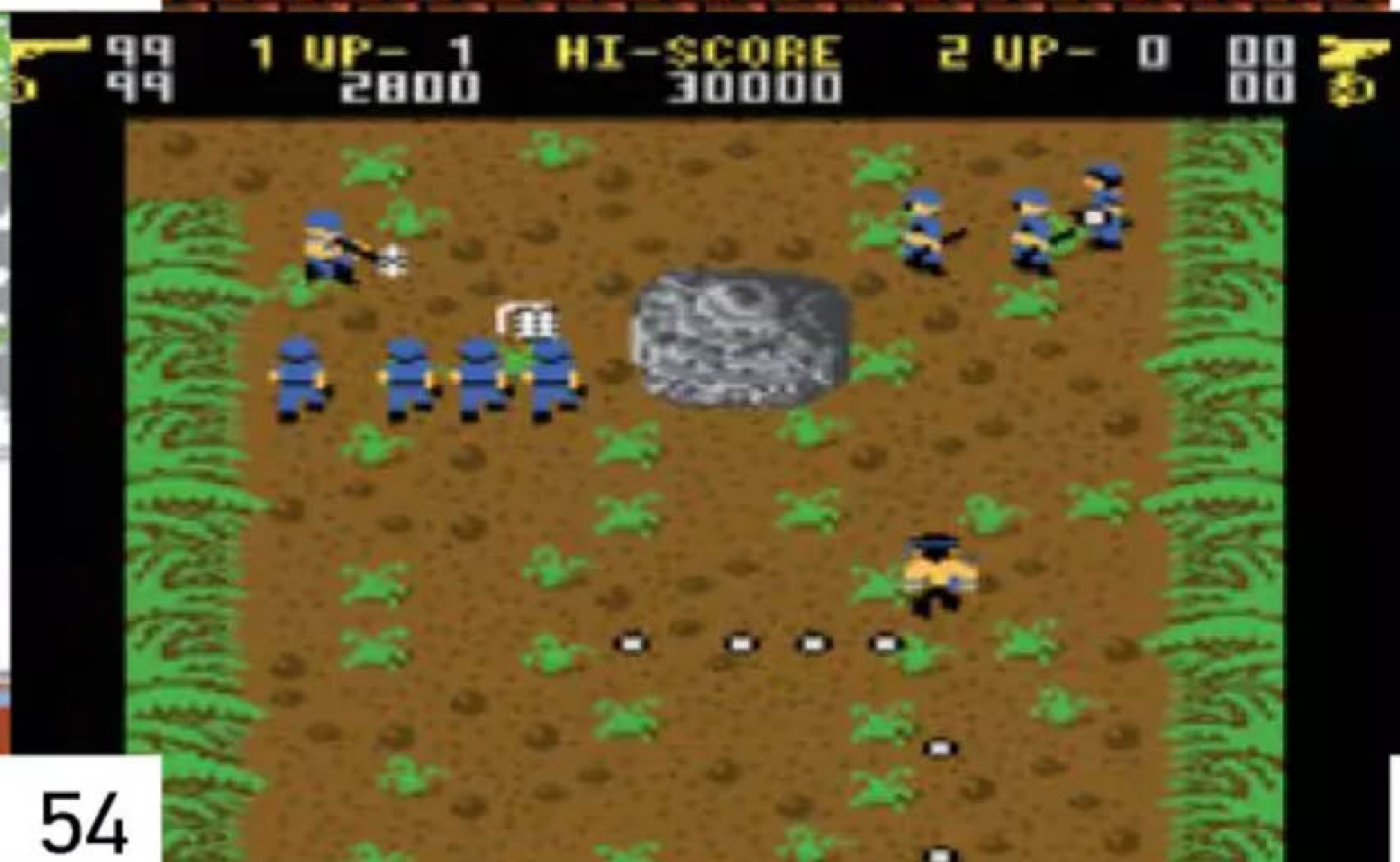
48


BLUE
SAVES
TIME
COMPUTER

49


TIME
HIT
MISS
SHOTS
PULSE
1:32.5

53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2800
HI-SCORE
30000
2 UP- 0

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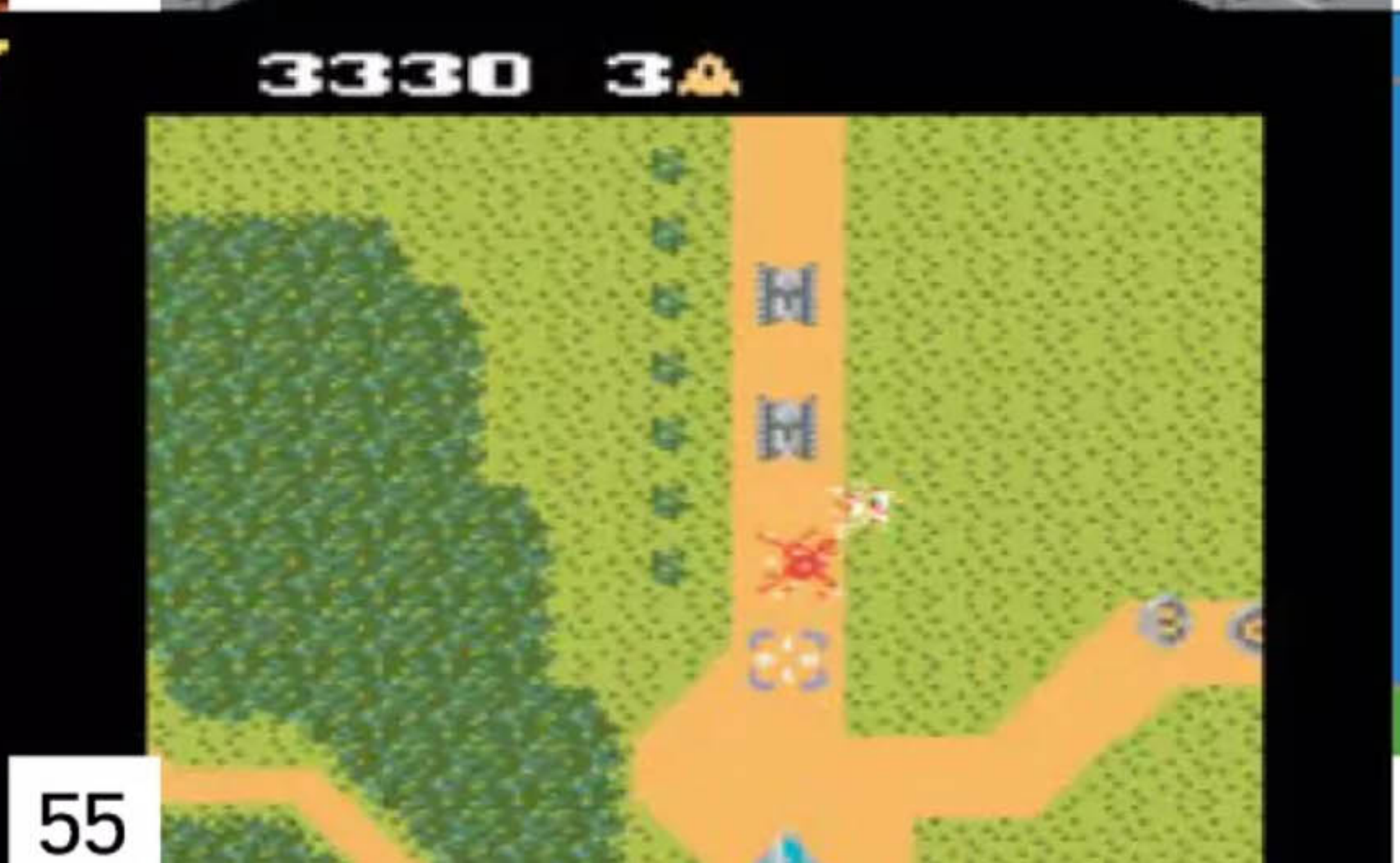

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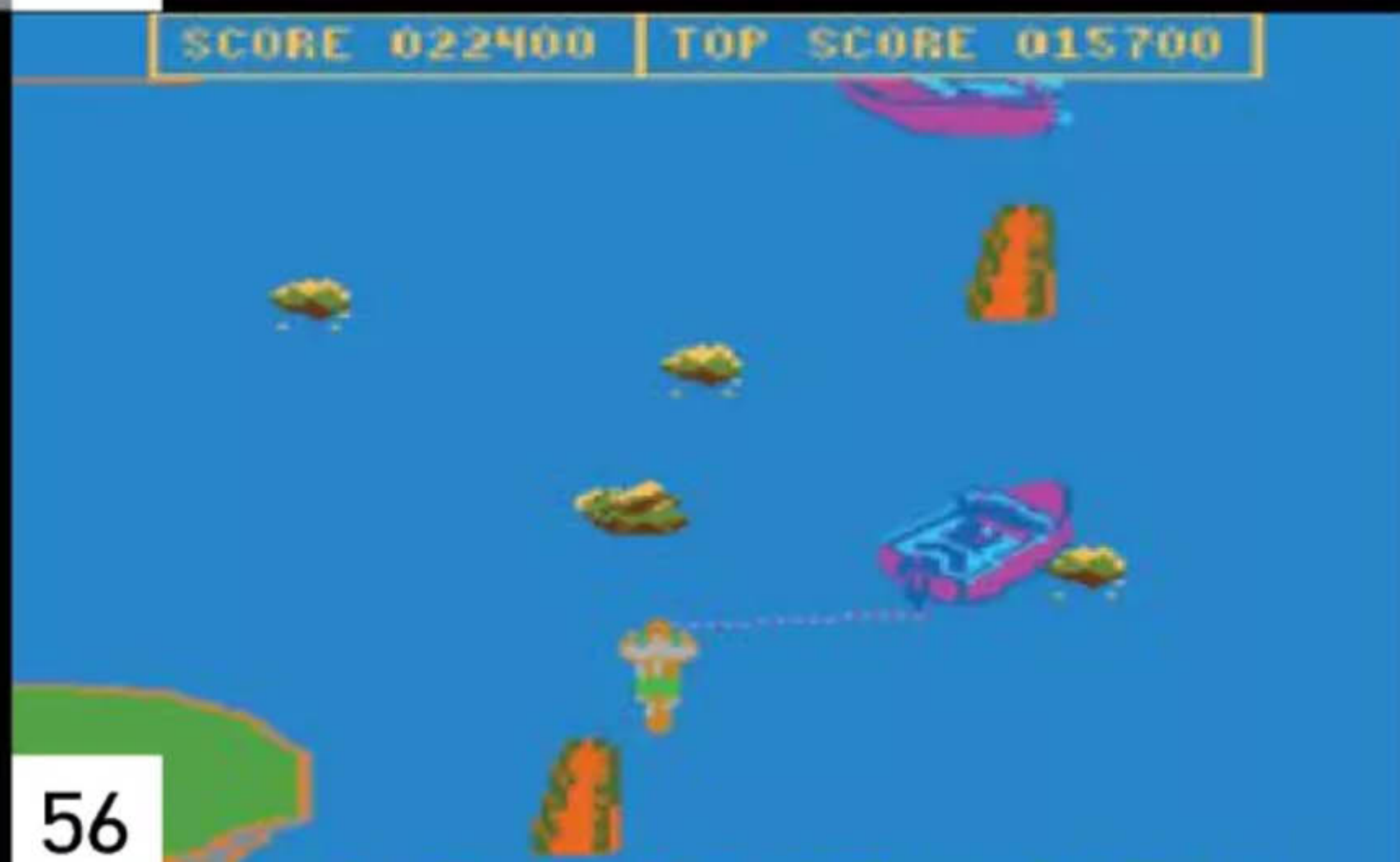

SCORE 022400
TOP SCORE 015700

56

ATARI ST

IT WAS THE MACHINE THAT SINGLE-HANDEDLY REVIVED THE FORTUNES OF AN INDUSTRY VETERAN. WE SPEAK TO THE MAN RESPONSIBLE FOR MASTERMINDING THE GREATEST COMEBACK SINCE LAZARUS

Following the videogame crash of the early-Eighties, Atari was in horrifying shape. The company's failure to successfully build on the triumph of its popular 2600 console (a machine languishing in obsolescence by this point), coupled with a generally poor quality of software available had triggered a catastrophic meltdown that very nearly destroyed the entire videogame industry. After the dust had settled, Atari's parent corporation Time Warner had incurred a cataclysmic $500 million loss and was predictably keen to offload its flagging games division. What occurred next has gone down in videogame folklore as one of the most startling turnarounds in the history of the medium.

Trading Places

Ironically, the man behind the product that would resurrect the ailing Atari brand had previously been instrumental in sullying the fortunes of the very company. Shiraz Shivji worked at rival Commodore during the early-Eighties and helped build the C64 – the home computer that stole away vital market share from Atari's 400 and 800 range, as well as its 2600 console. "I became interested in electronics from my early childhood in Tanzania and my education in the UK," says Shiraz, when asked about how he became entangled in the fabric of Atari's history. "I attended the University of Southampton and obtained a First-Class Honours degree and then moved to Stanford University in the US to pursue a PhD in electronics. I was granted a master's and passed the qualifying exam but left before obtaining my degree as I was running out of funds. I started working in Silicon Valley and obtained experience in hardware and software." By 1984 Shiraz had risen to the role of director of engineering at Commodore and it was at this point that fate intervened.

Although Commodore was undoubtedly causing Atari some serious headaches, things weren't exactly harmonious in the boardroom. "Jack Tramiel was president and CEO of Commodore and Irving Gould was the chairman," explains Shiraz. "Irving was the largest shareholder and Jack was the second largest. In January 1984 there was a showdown between the two of them over the role of Jack's sons at Commodore." Polish-born Tramiel had founded the company in the Fifties after enduring a particularly difficult life (he was interned in Auschwitz concentration camp for five years during World War II), so his insistence on 'keeping it in the family' is understandable. However, Irving refused to budge and this forced Tramiel's hand. He called a board meeting and tendered his resignation. "I was tremendously disappointed and shocked at this decision," remembers Shiraz.

However, it wasn't long before the two men were reunited. "I soon met with Jack and discussed the possibility of joining him if he was to start a personal computer company," recalls Shiraz. "There were a number of senior execs at Commodore with experience in finance, manufacturing, design, engineering, marketing and sales that felt the same way, so I told Jack he could count on a core team to start a company. At this time Warner Communications was thinking of selling or disposing of Atari as it was losing a lot of money. Jack made an offer for the company by injecting $30 million – $25m from himself and $5m from associates, such as myself. Eventually the deal was struck and that is how I came to be the vice president of advanced development at Atari."

Rising to the challenge

Having switched sides in dramatic fashion, Tramiel had a new company to command in the shape of Atari Incorporated. He now needed a product that would get the firm back on its feet. Thankfully Shiraz and his team already had ideas forming. "The core team of engineers and developers were thinking of the next personal computer," Shiraz says. "The work on the ST didn't really start until Atari was actually purchased, but the main ideas of using a 32-bit processor as well as support for music and graphics were already important for us."

Shiraz duly started work on the new project codenamed 'Rock Bottom Price', or 'RBP' for short – an indication of Tramiel's desire to produce a cheap yet powerful home computer. "We moved everyone into the Atari facilities on Borregas Avenue in Sunnyvale in

INSTANT EXPERT

Atari ST

- Recording artists that have used the ST include Fatboy Slim, Mike Oldfield, UK one-hit wonder White Town and French knob-twiddler Jean Michel Jarre.
- The machine was amazingly popular in Germany, where it was used predominantly for desktop publishing and CAD.
- The ST was the first home computer to feature built-in MIDI ports.
- Released in 1986, the 1040 ST variant was the first personal computer to include 1 MB of RAM.
- When the price dropped to $999 it famously became the first computer to break the $1,000/megabyte price barrier.
- One early tagline for Atari's ST range was 'Power without the price'.
- Jack Tramiel included the Hebrew alphabet with ST's ROM character set to respectfully acknowledge his Jewish heritage.

> "MUSIC AND GRAPHICS WERE IMPORTANT TO US"
> SHIRAZ SHIVJI

DATAFILE

YEAR RELEASED: 1985
ORIGINAL PRICE: £749.99 (WITH MONOCHROME MONITOR)
BUY IT NOW FOR: £15+ ($35+)
ASSOCIATED MAGAZINES: ST FORMAT, ST ACTION, ATARI ST USER, ST WORLD
WHY THE ATARI ST WAS GREAT…
ATARI WOULD STILL BE REMEMBERED SOLELY AS THE COMPANY THAT FLUSHED THE ENTIRE VIDEOGAME INDUSTRY DOWN THE TOILET IN THE EARLY-EIGHTIES WERE IT NOT FOR THE SAVIOUR THAT WAS THE ST. IT MAY HAVE LOST THE WAR TO THE COMMODORE AMIGA, BUT THIS LEGENDARY MACHINE WAS THE FIRST TRUE 16-BIT HOME COMPUTER AND PLAYED HOST TO SUCH SEMINAL GAMES AS DUNGEON MASTER AND STARGLIDER. IT WAS ALSO BRILLIANT FOR BEDROOM TUNESMITHS THANKS TO ITS BUILT-IN MIDI SUPPORT.

“WE MOVED EVERYONE INTO ATARI FACILITIES ON BORREGAS AVENUE IN SUNNYVALE IN JULY 1984”

SHIRAZ SHIVJI

July 1984," says Shiraz, who had to dig into his own pockets to ensure development went smoothly. "I paid for airline tickets and hotel bills for my hardware team using my own personal credit cards and was not paid until much later. I think the real development began in August; we didn't usually get home until 11pm some nights, and sometimes it was well after midnight."

This punishing schedule was made even more demanding because Shiraz knew exactly what would happen if he failed to deliver the goods on time. "If we did not come through we would have had to close shop," he states, matter-of-factly. "You can imagine I really felt the very heavy burden of responsibility. We had no choice but to deliver a product that was superior in terms of performance and price." Amazingly, this intense pressure seemed to bring out the best in the team. "I felt very confident and comfortable that I and the team were up to the task," states Shiraz. "After all, I had a core hardware team of four engineers from Commodore that had worked for me in the past so I knew what they could do. We integrated with people from Atari and had a very small but efficient team that worked very hard to get the hardware done in record time. Somehow, although there was much pressure on us, I did not have any sleepless nights. This is because of the trust I had in the team."

The engineers at Atari originally envisaged the machine as a 'true' 32-bit computer, but eventually compromised and settled for a 32-bit processor that communicated through a 16-bit external bus (the abbreviation 'ST' actually stands for '16/32'). "We had a meeting with the CEO of National Semiconductor, who was anxious for us to use their 32-bit NS3200 processor," remembers Shiraz. "It turned out that even though the Motorola 68000 was a quasi-32-bit chip, the performance turned out to be as good, if not better than the National Semiconductor's true 32-bit chip. Motorola had a number of parts that they could not sell as one of the parameters did not fully meet their specification, but we found that this particular parameter could be relaxed in our design and so we could use these parts that would have to be thrown away, saving both us and Motorola several million dollars." Amazingly, despite these cost-cutting measures, the ST was still able to outperform more expensive rivals. "Our design was so optimised for performance and cost that you could emulate the Apple Macintosh – if you had the Apple ROMs – and an application would run faster on the Atari ST," reveals a justifiably proud Shiraz.

As the project neared completion, Shiraz and his team started to realise just how amazing their achievement was. They had taken the ST from rough concept to final product in less than half a year, and when 85 per cent complete ST machines were shown at the CES show in 1985, it amazed the industry. "I was very proud that the team had accomplished so much in a short period of time," says Shiraz. When the machine officially launched in May, it marked the dawn of a resurgence for the previously ailing company and it speaks volumes for the popularity of the ST range that when Tramiel took Atari public in November, stock was selling for nearly triple its original price just a few months later. The ST had saved Atari from the scrapheap, and all in less than half a year.

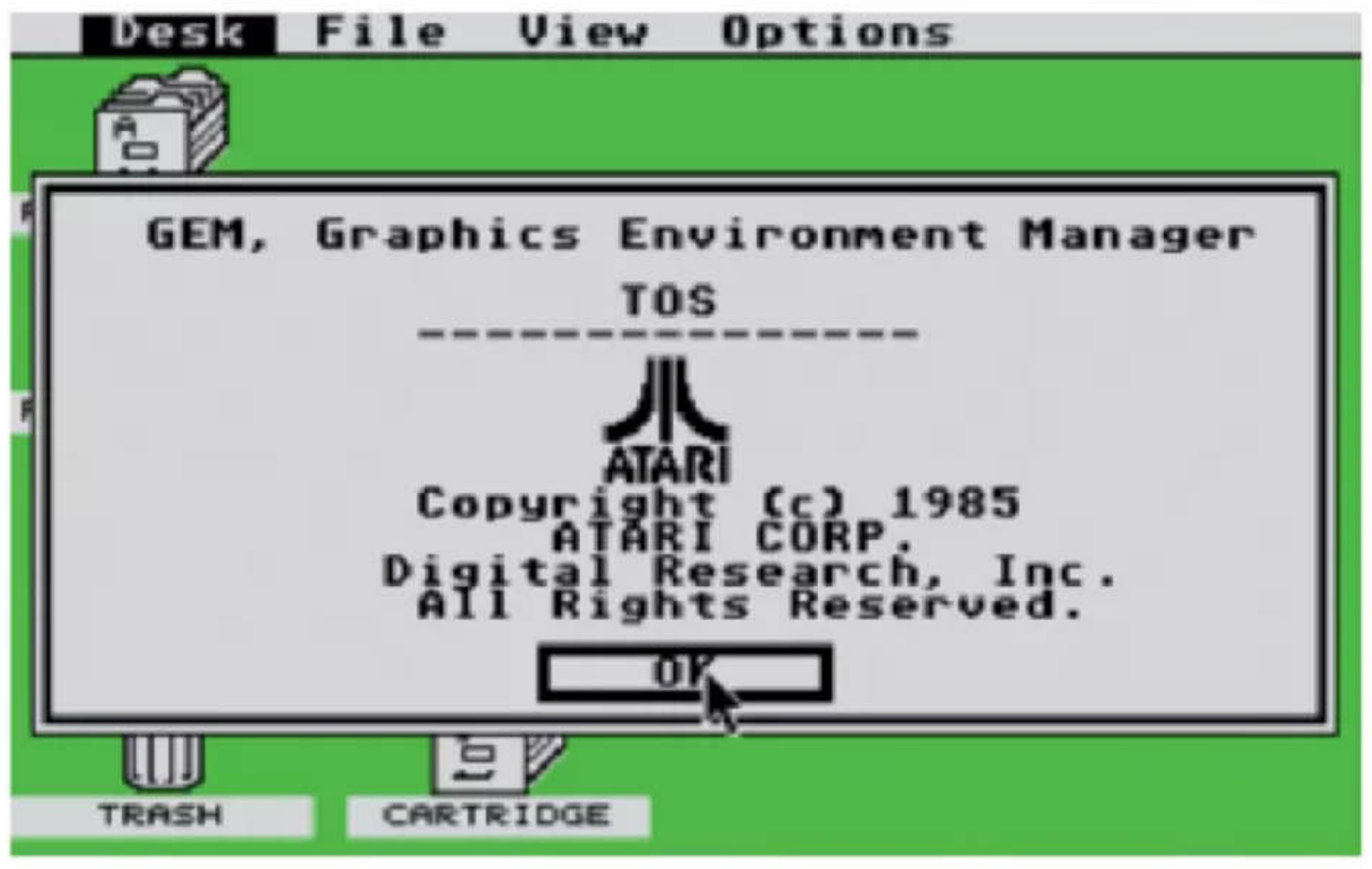
Business or pleasure?

It may come as a shock to learn that the man behind the ST isn't much of a gamer. "I'm not into games myself but I am quite aware of what needs to be done in the hardware to create good games," says Shiraz. "With the ST, the processor/memory bandwidth is highly optimised, leading to very fast graphical interactions. I think the entertainment software for the ST was reasonably good, but first and foremost this was going to be a consumer machine." Despite this obvious focus on business, the ST played host to some truly groundbreaking pieces of software and received sterling support from the likes of Bullfrog (*Populous*), Spectrum HoloByte (*Falcon*), FTL (*Dungeon Master*), Realtime Games (*Carrier Command*), Argonaut (*Starglider*) and David Braben (*Virus*).

The Atari ST may have been great for playing games on but it also proved to be a massive hit with musical types, too, who were keen to play around with the tech and push it as far as possible. "Right from the start we were interested in providing good musical capability," explains Shiraz. "Since we felt that the Yamaha chip in the ST was not as strong as we would have liked, we thought that we should put in an interface for external music access. We found that we could do it rather inexpensively using a Motorola serial chip and a connector for the MIDI-port. The total cost for this was 75 cents. The biggest problem was finding the space

» Borregas Avenue, Sunnyvale, California – the site of Atari's HQ during the ST years.

ATARI SF354
ATARI 520ST
ATARI SM124



GEM, Graphics Environment Manager
TOS

ATARI
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ATARI CORP.
Digital Research, Inc.
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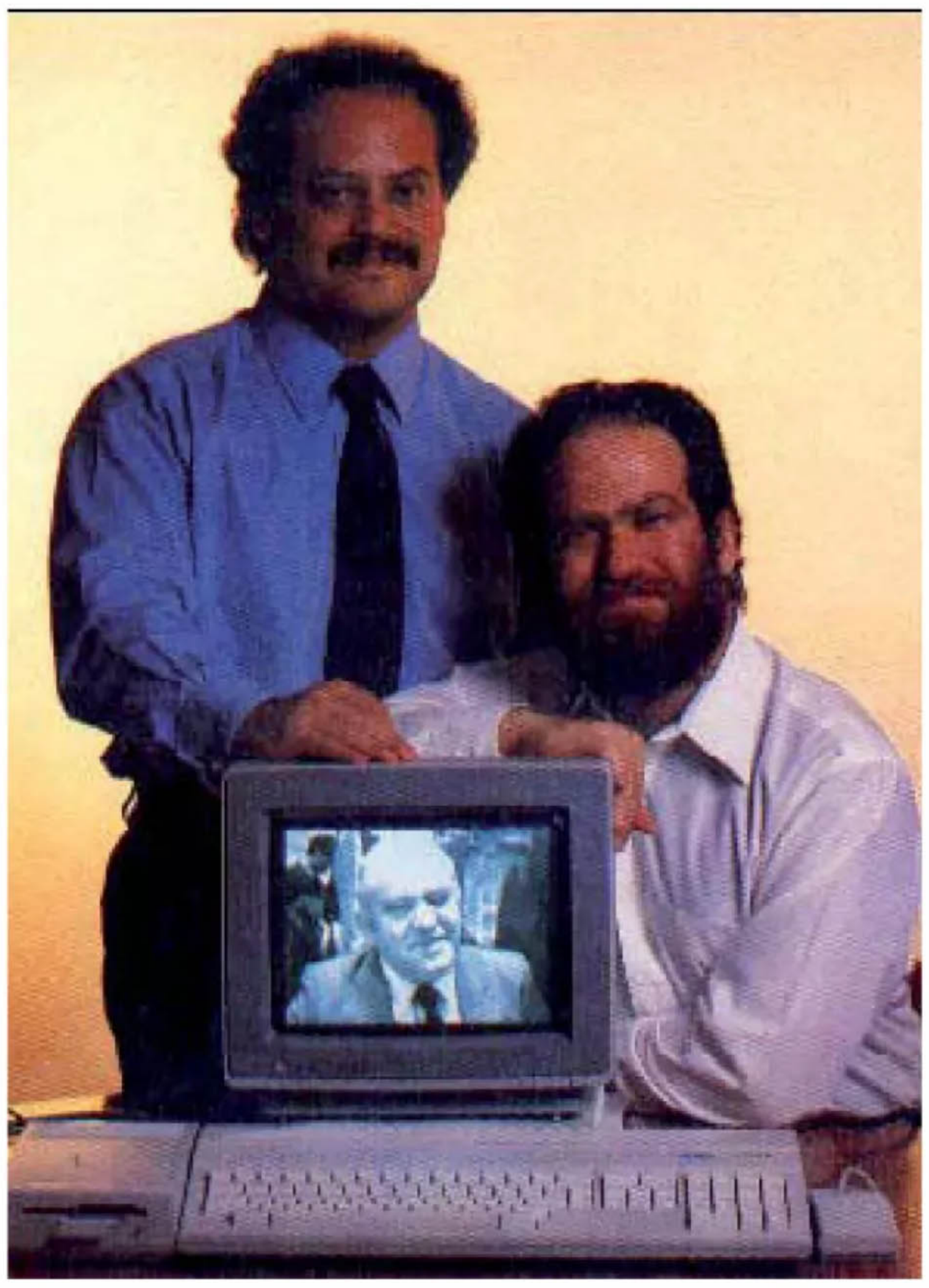
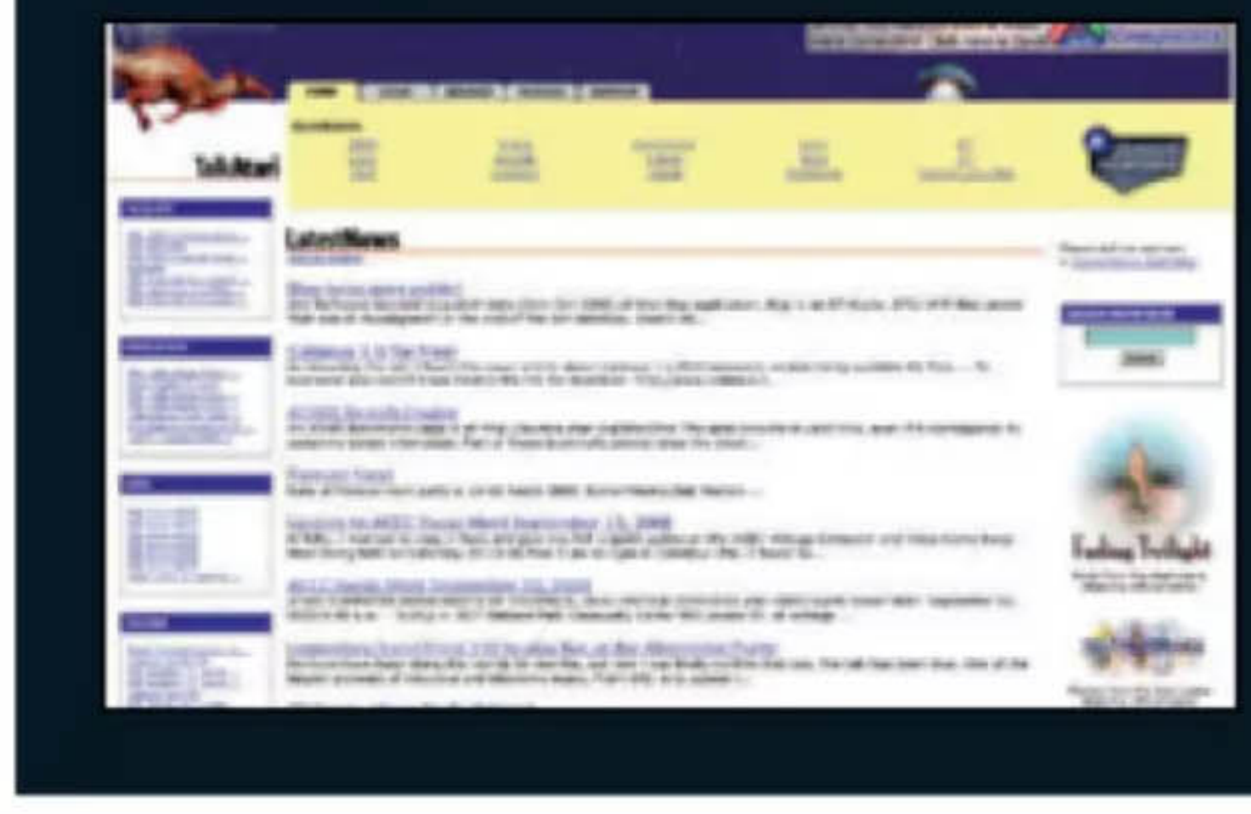
» The ST's TOS (Tramiel Operating System) in all its lurid green glory.



COMMUNITY

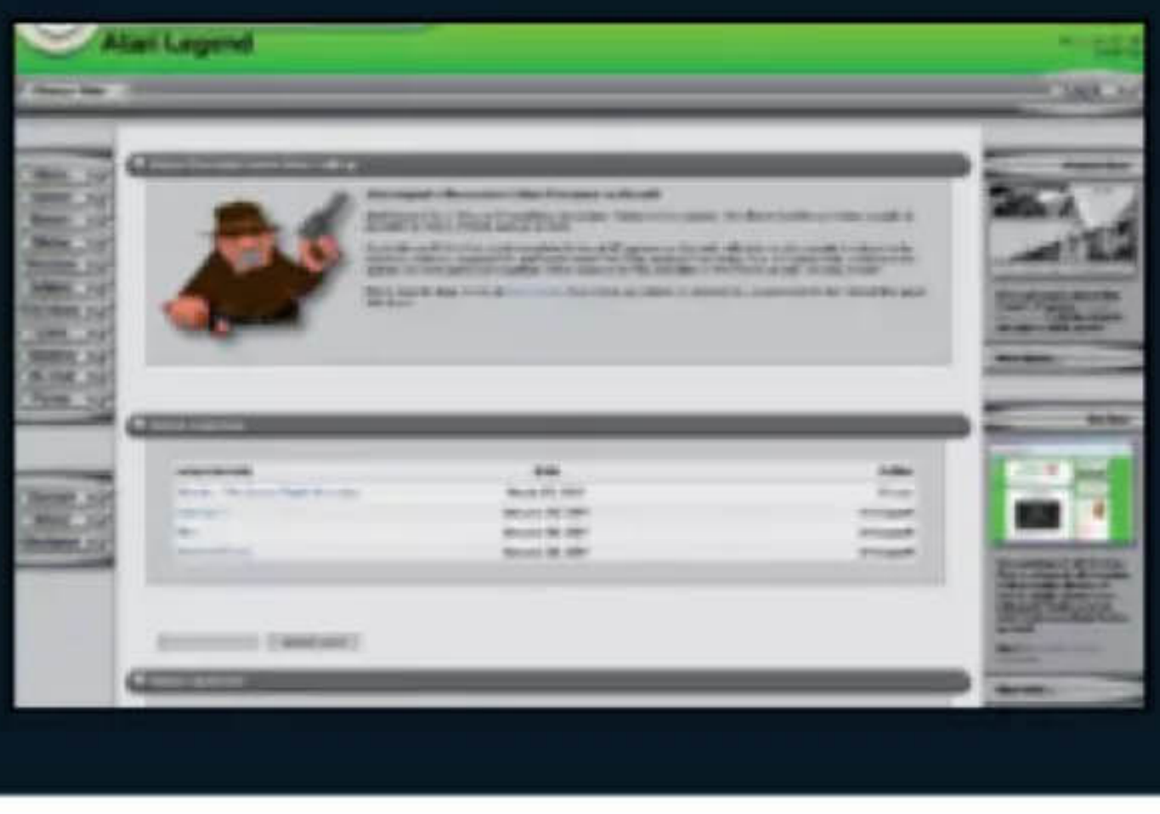
ATARI.ORG
www.atari.org

A bustling and active community, Atari.org not only contains a wealth of information but also hosts several other sub-sites, run by Atari fanatics. It doesn't look like much but is a great resource and easy to navigate.



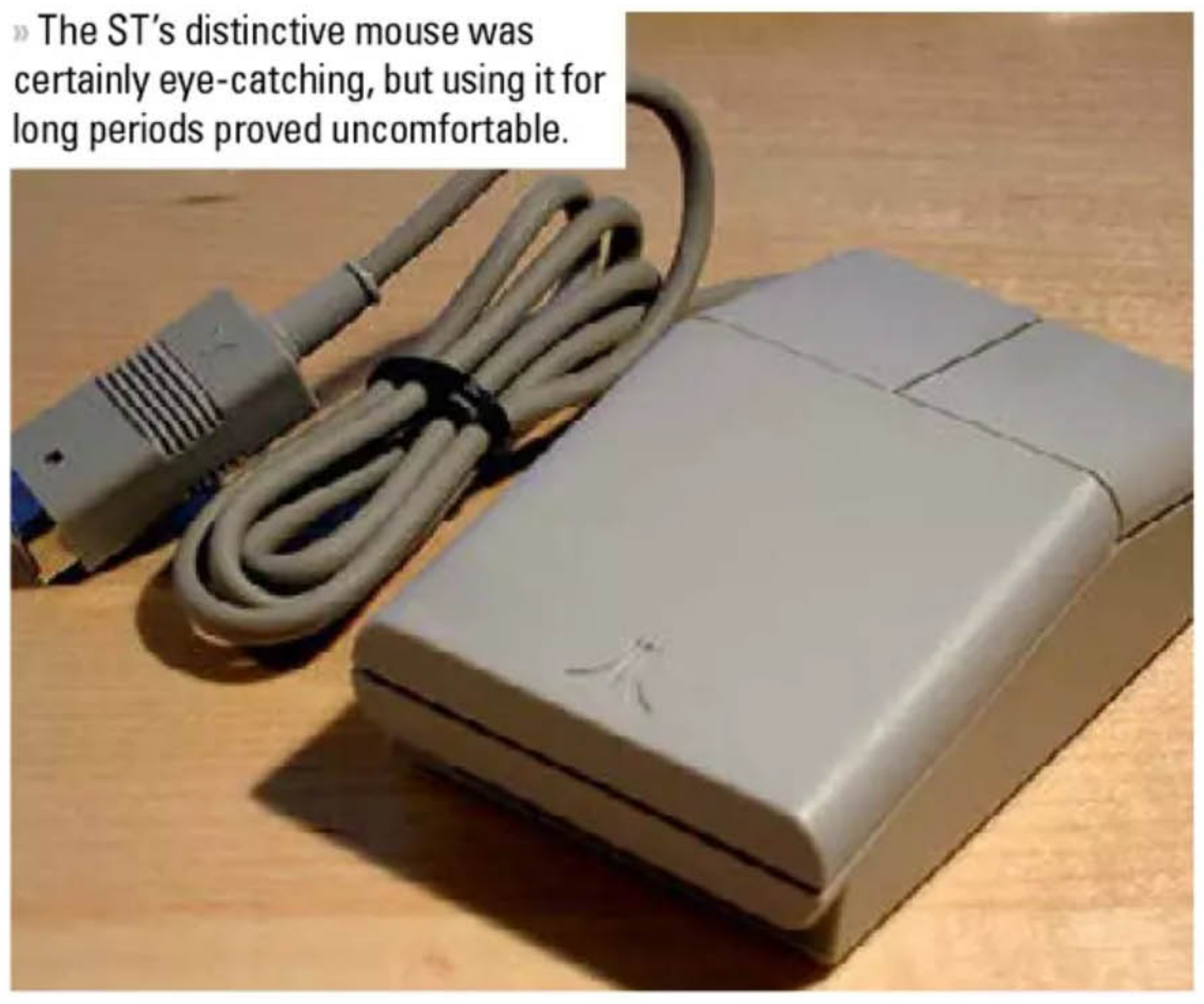
Atari Legend
www.atarilegend.com

Solely focused on keeping the memory of the ST alive, Atari Legend doesn't get updated as often as we'd like but still contains a lot of interesting content, including reviews, interviews and demos. It's well worth taking a look at.



Little Green Desktop
www.lgd.fatal-design.com

The name of this site alludes to the distinctive tint of the Atari TOS operating system; the design may hurt your eyes but the content is superb. As well as running a spotlight on different games, it also carries old issues of ST Format.



» The ST's distinctive mouse was certainly eye-catching, but using it for long periods proved uncomfortable.

ATARI, CORP.
MEETING ROOM 1

for connectors in the back. Musicians found it a great and inexpensive MIDI instrument."

Sadly, it didn't take very long for Commodore's brand new Amiga to overshadow the ST and as the Eighties drew to a close Atari's once impressive machine was starting to trail its opponent. US sales dropped off dramatically, but in Europe the machine remained a healthy success. Shiraz has his own theory on this disparity: "The reason is very simple – distribution channels. Atari did not have any distribution channels to speak of in the US. In Europe, we had a great cadre of ex-Commodore people and dealers that we could use."

Ironically, considering they were locked in battle for much of their life spans, the Atari and Amiga are intrinsically linked. "Jay Miner was at Atari in the old days and was involved in the design of their products," explains Shiraz. "He left Atari to design the Amiga. Atari had funded some of this effort and had an option to buy the Amiga, and when we took over in July 1984 the first order of business was to decide what to do with this option. The problem was that the Amiga was not quite ready and would need a lot of money to fully acquire. We decided to pass, but this put enormous pressure on our own development team. Commodore, on the other hand, did not have an internally developed 32-bit graphics-oriented machine or the confidence to develop anything internally, so they ended up buying the Amiga for between $25-$30 million and spent a further $20 million or so on it, releasing it a little after the launch of the ST. The roles were reversed – the Atari ST has a Commodore pedigree, while the Commodore Amiga has an Atari pedigree!"

YOU'RE A GEM

As the hardware neared completion Shiraz's team naturally began to look for possible operating systems to use with the machine.

"The hardware was fairly easy for us to do and we beat the Amiga team to the punch although they had started at least two years earlier," says Shiraz. "The problem we both had was how to get a modern operating system." Early on in the development of the ST, Atari was contacted by Microsoft with the suggestion that the company port Windows to its new home computer. This idea was rejected as Windows was still two years away from being finished, and given the pressing need to get the ST in shops, Atari simply could not afford to waste time. Casting aside the expensive alternative of coding an operating system in-house, Atari got in touch with Digital Research – creator of the GEM system. "Commodore's Amiga team solved the OS problem by going to the UK to get a sophisticated multi-tasking system, but for us we really had no choice but to go with Digital Research," explains Shiraz.

"We came up with a deal with Gary Kildall, president and CEO of Digital Research, to licence and use GEM and to use some of his engineers to help port it on the Atari ST. We sent a team of engineers to work in Monterrey where Digital Research was located." It was a task of Herculean proportions, as bugs were still being ironed out while the porting was taking place, luckily the team finished their tough task.

The final push

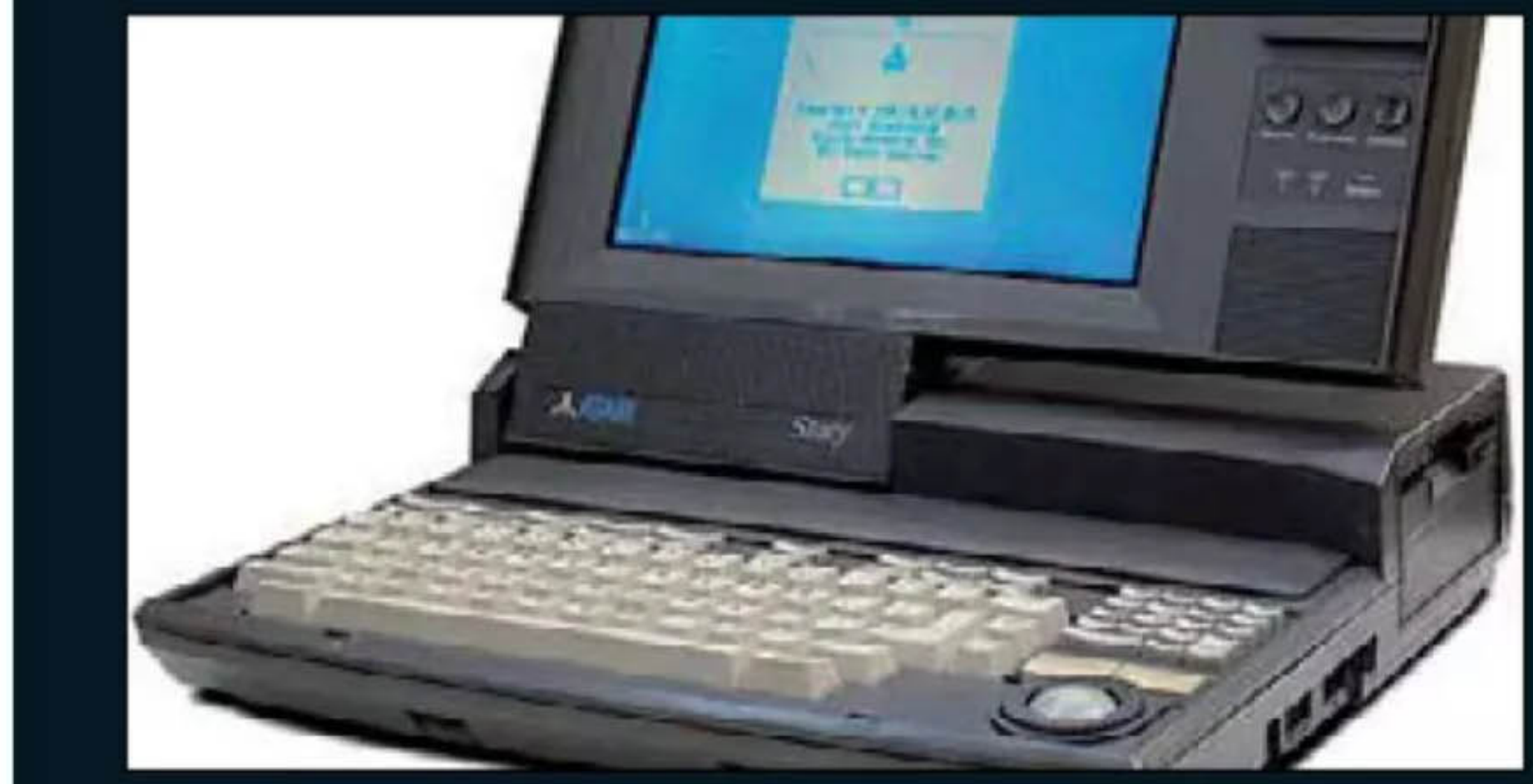
To claw back some of the market, Atari sanctioned the release of an updated machine, dubbed the STE (with the E standing for Enhanced). Shiraz's involvement was minimal: "I was on my way out of Atari at that time. I left in 1989." Other versions of the computer were also put into production, including the ambitious Atari TT and Falcon, but neither of these met with any degree of success. "The problem was that Motorola had lost the processor battle," comments Shiraz. "The TT was based on the Motorola 68030, a successor to the 68000. This processor was clearly inferior to the 386 and 486 from Intel. There was no way Atari could compete with Motorola processors." In 1993, Atari pulled the plug on its range of home computers in order to focus its attention on the ill-fated Jaguar console and sank once again into a period of recession.

Having created one of the quintessential home computer platforms of the past 20 years, what memories does Shiraz hold dearest after all this time? "The teamwork was outstanding," he replies. "Even today most of the members of the team look very fondly at that time as the best years of their lives. The total hardware development was done in the space of five months. I have not seen such an accelerated development for such a complex project in that amount of time."

VERSIONS

Atari STacy (1987)

The Atari STacy was essentially a portable ST for the more mobile user. This unwieldy beast ran off 12 'C' cell batteries and would grant a measly 15 minutes of use before exhausting its power supply. Ironically, it could imitate the more expensive Apple Mac Portable via emulation, and was even faster – proof that the ST's power was not to be underestimated.



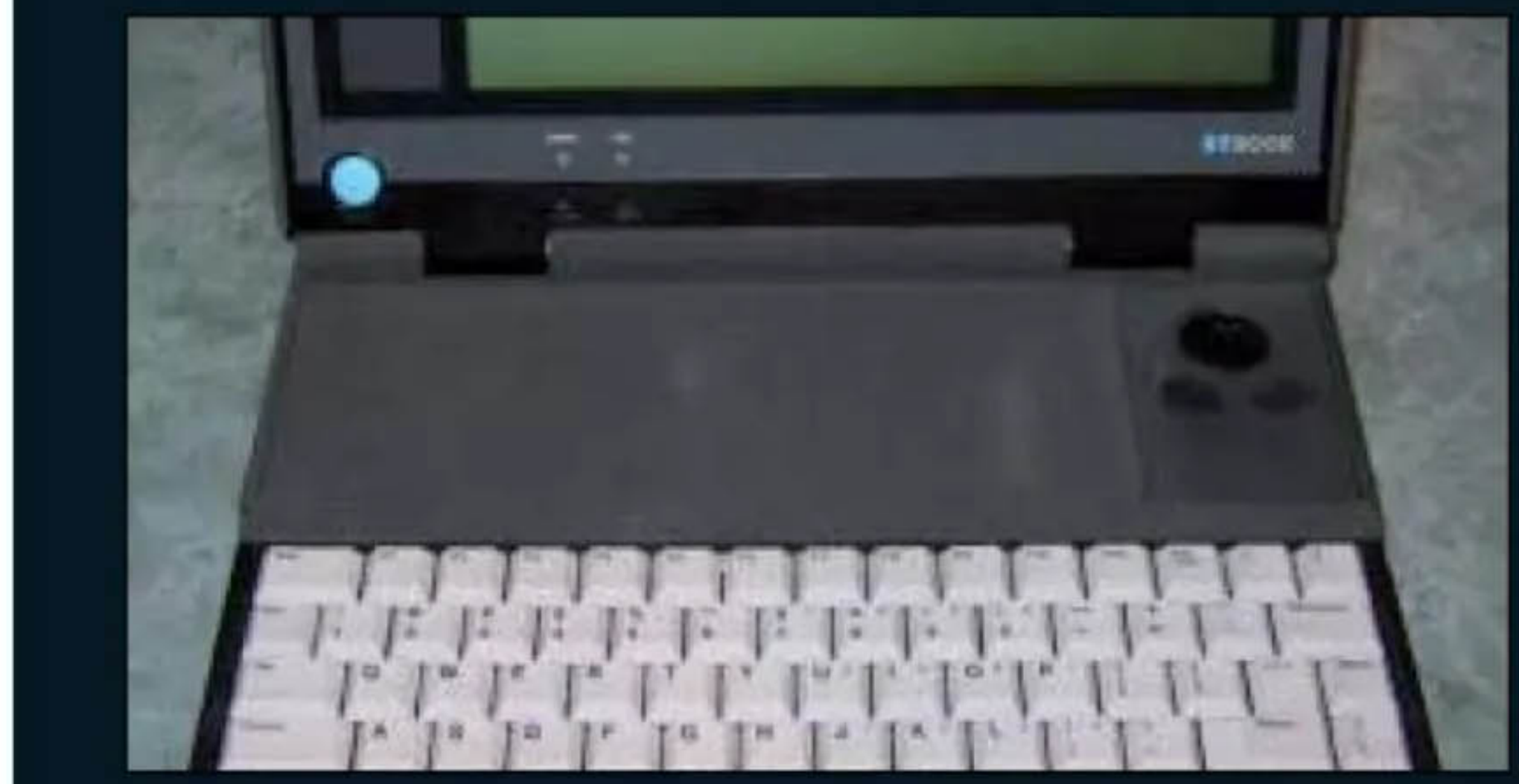
Atari STE (1989)

The ST Enhanced was pretty much how it sounded – a slightly improved version of the original machine. It featured a larger colour palette, improved sound capabilities and a new graphics co-processor, but sadly few games were produced to take advantage of this new power, and the machine proved too little, too late.

ATARI
1040STE

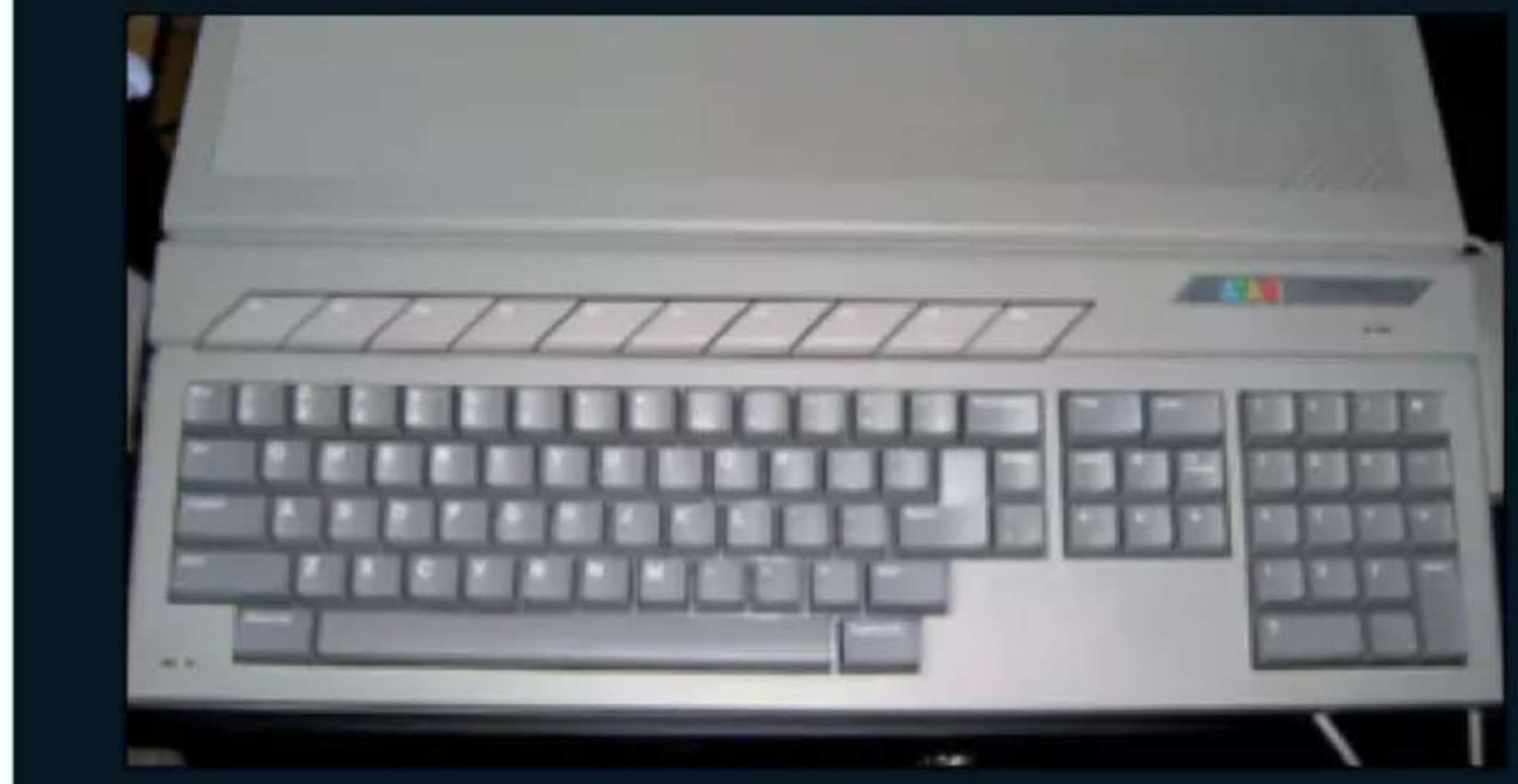
ST Book (1990)

Amazingly, the STacy wasn't a complete disaster and this led Atari to produce a successor – the ST Book. Slimmer and more portable than its forebear, the ST Book was less power-hungry because it lacked a backlit display – which naturally made it hard to use in dim light.



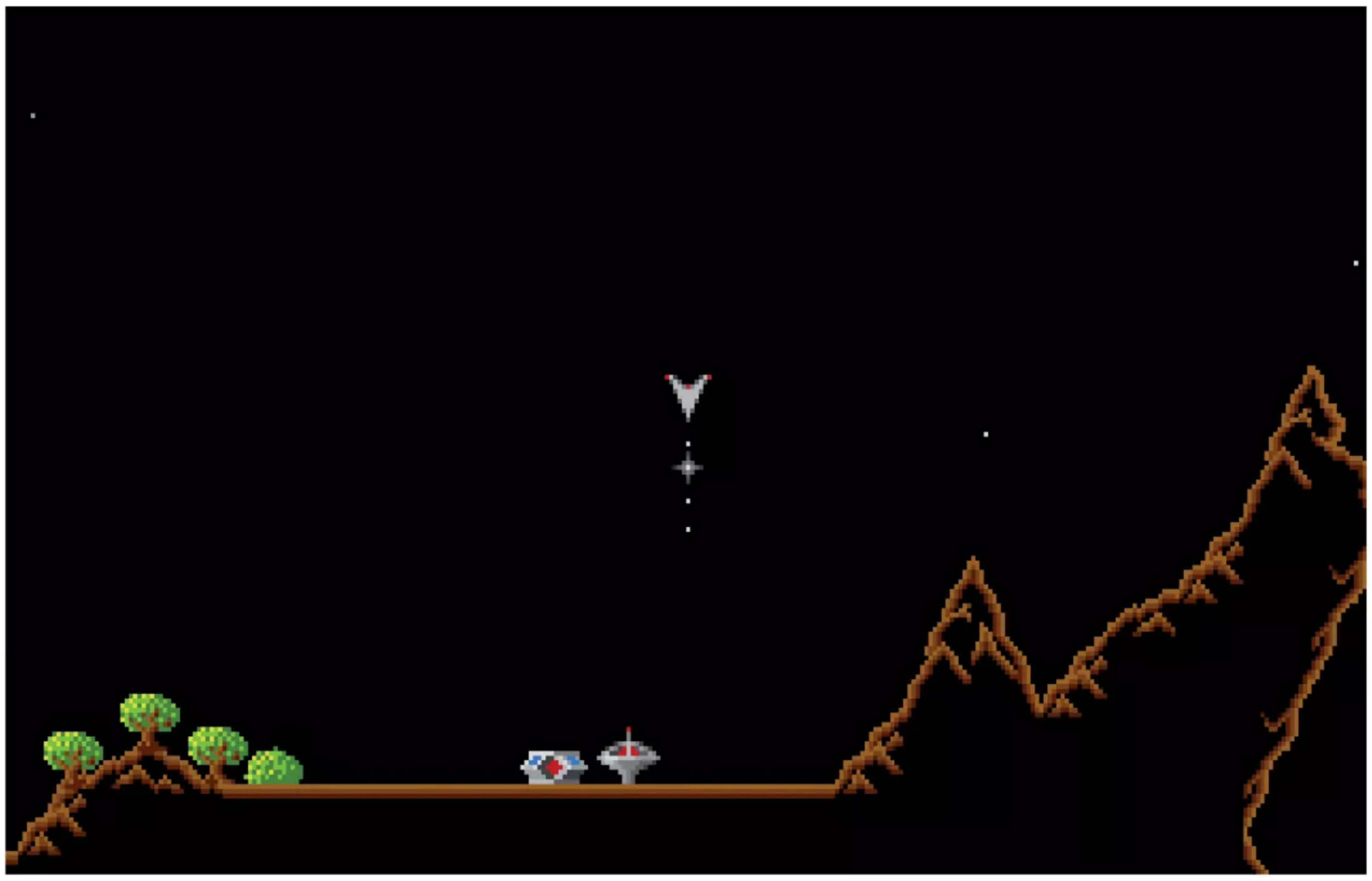
Atari Falcon (1992)

The final entry in Atari's home computer range, the Falcon was so hurriedly rushed to market that the casing wasn't ready for launch and so it used the 1040 ST exterior instead. Discontinued after a year, the Falcon remains a popular platform for those interested in hardware modification.



ATARI ST: PERFECT 10 GAMES

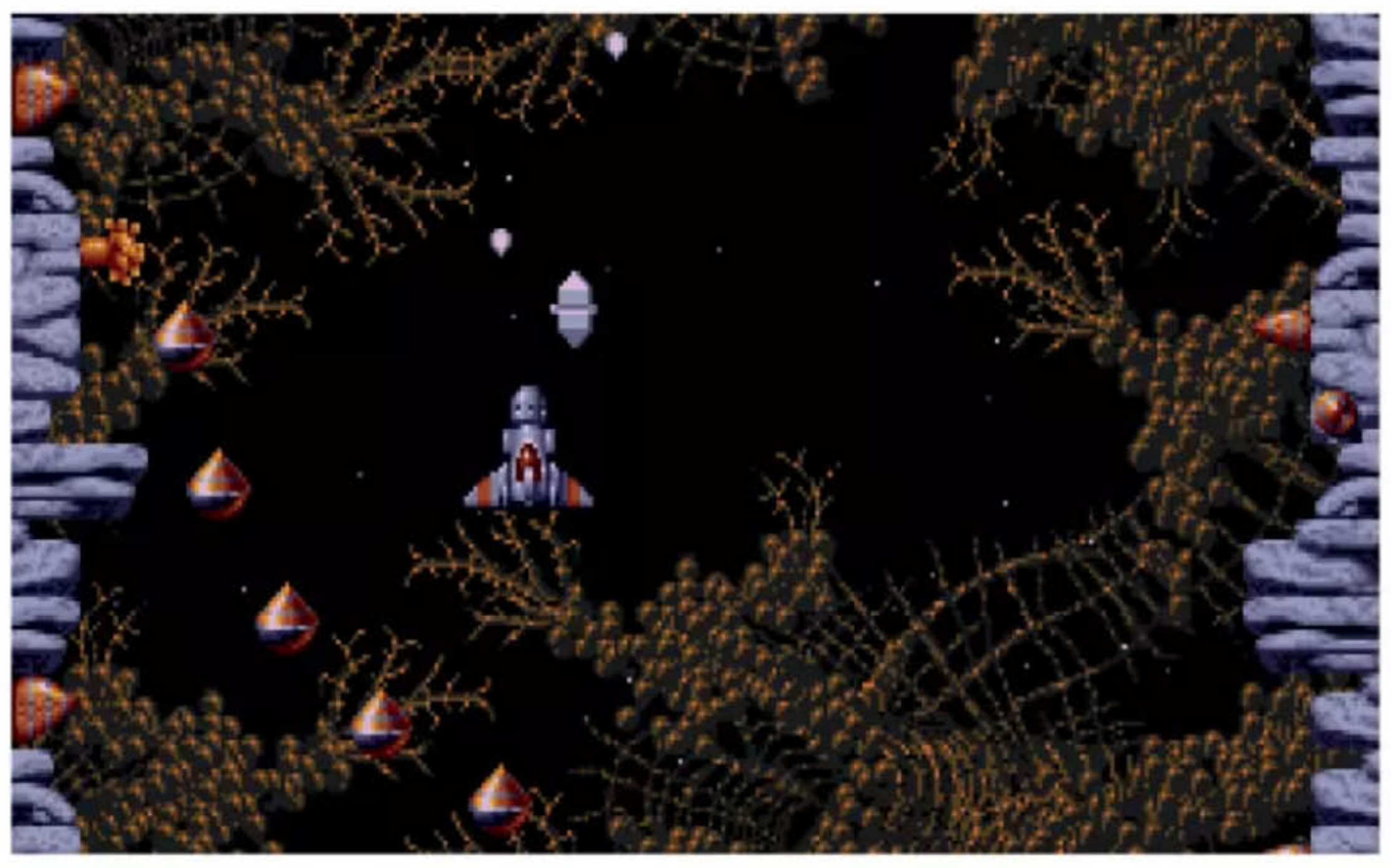
ALTHOUGH THE ATARI ST WOULD OFTEN LOSE OUT TO THE MORE POWERFUL AMIGA, THERE WERE STILL PLENTY OF FANTASTIC GAMES AVAILABLE FOR IT. WE'VE GONE THROUGH THE ARCHIVES AND PICKED OUT OUR 10 FAVOURITES



OIDS

» RELEASED: 1987 » PUBLISHED BY: FTL GAMES
» CREATED BY: DAN HEWITT

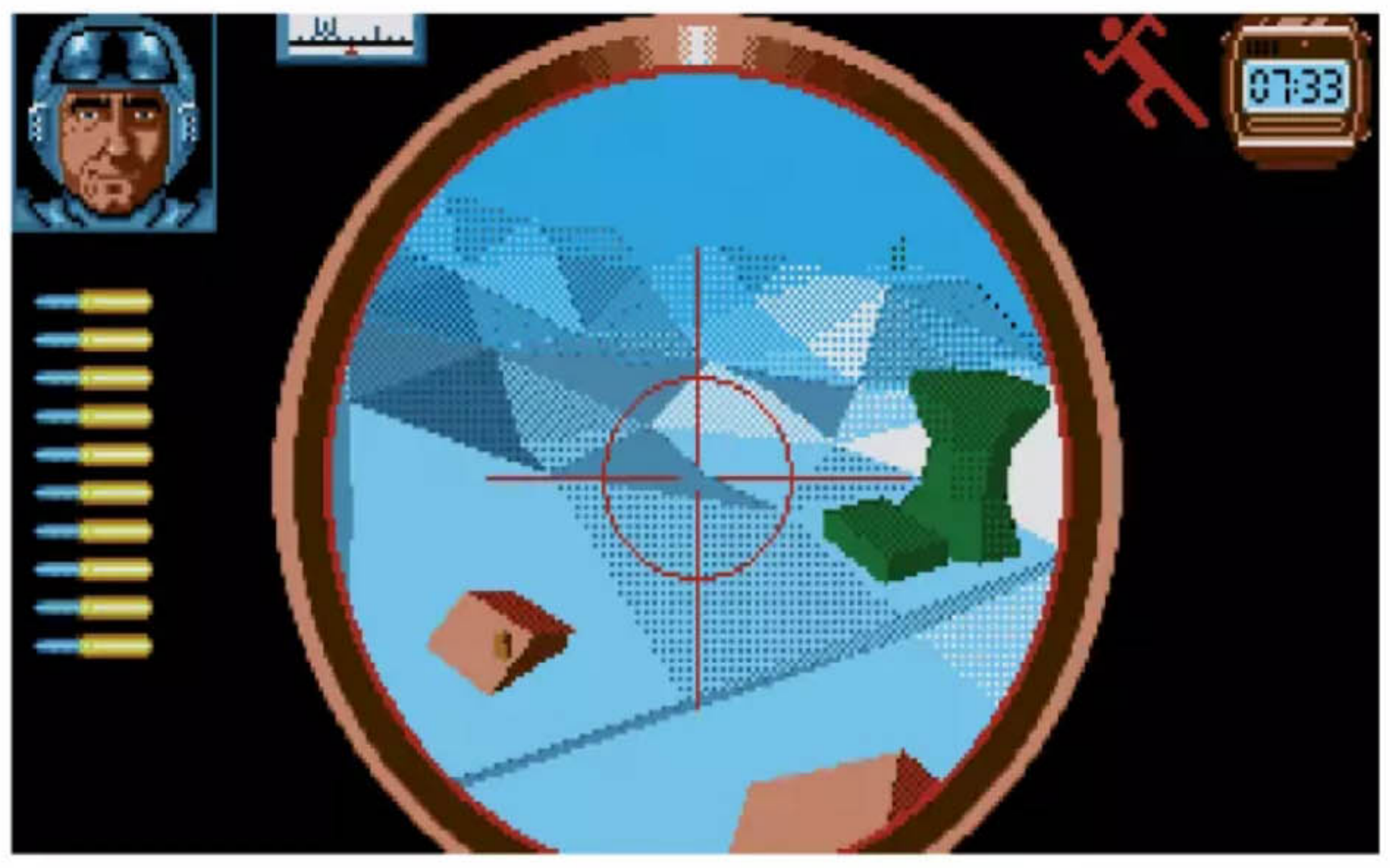
1 We're willing to put our neck on the line here and say that this *Thrust*-clone by Dan Hewitt is probably the best game of its type. Piloting a triangular V-wing fighter, your job was to travel to a variety of hostile planets to liberate the titular Oids – the planets' imprisoned android slaves. However, working against you was the strong gravitational pull of the planet's surface, which attempted to drag you into its sharp, mountainous maws. On top of this you also had to deal with hordes of rocket-spewing enemy spacecraft and your ship's rapidly depleting fuel gauge. The icing on the cake came in the form of a nifty level editor that allowed you to effortlessly mock up your own planets and galaxies to play through.



XENON 2: MEGABLAST

» RELEASED: 1989 » PUBLISHED BY: IMAGEWORKS
» CREATED BY: MARTIN DAY

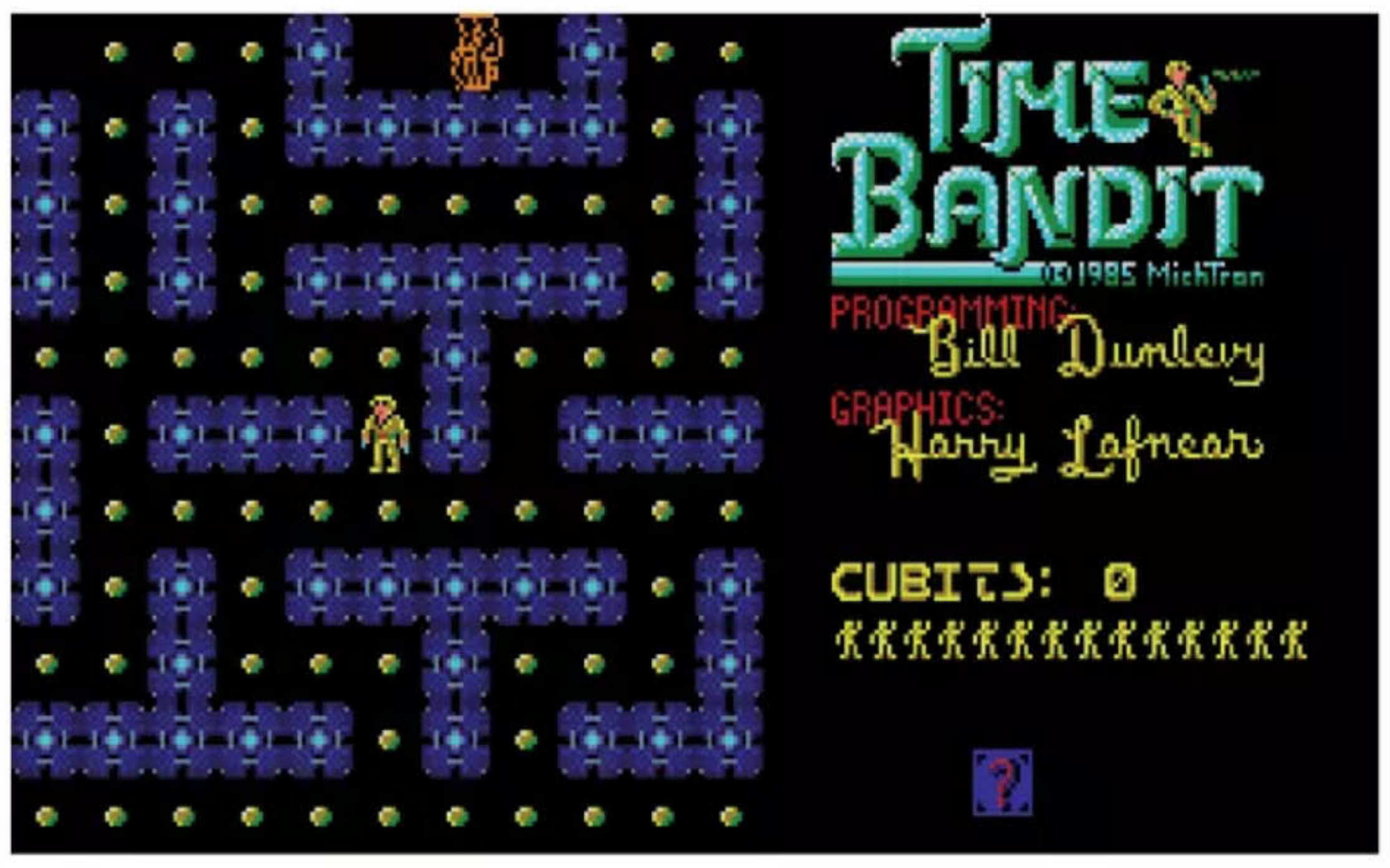
2 The Bitmap Brothers' sequel to its seminal shoot-'em-up franchise was entrenched in trippy colours, eye-blistering visuals and a punchy soundtrack by acid-house musician Tim Simenon (aka Bomb The Bass). Playing slightly differently to its predecessor, however, *Xenon 2: Megablast* retained the vertical shooter ideals of the original, but would drop the vehicle-shifting and arena-setting for an unusual underwater backdrop, plus a unique vertical-scrolling perspective that allowed players to pull the camera backwards. While *Xenon 2: Megablast* feels somewhat sedate when compared to its Eastern contemporaries, it remains a solid blaster.



MIDWINTER

» RELEASED: 1989 » PUBLISHED BY: RAINBIRD
» CREATED BY: MIKE SINGLETON

3 Many people are put off by *Midwinter's* complexity, but those who invest time into the game are greatly rewarded. Set in *Midwinter*, a sprawling island forged inside harsh snowy wastelands, the player must try to stop a maniacal general from overthrowing the snowy islet. Playing the role of a police officer, your mission is to explore the island, evade enemy troops, and enlist the support of the islanders. Played out through a first-person perspective, *Midwinter's* harsh and bitter environment won't be to everyone's tastes, but it's definitely a place that every ST owner and strategy fan should take time to visit.



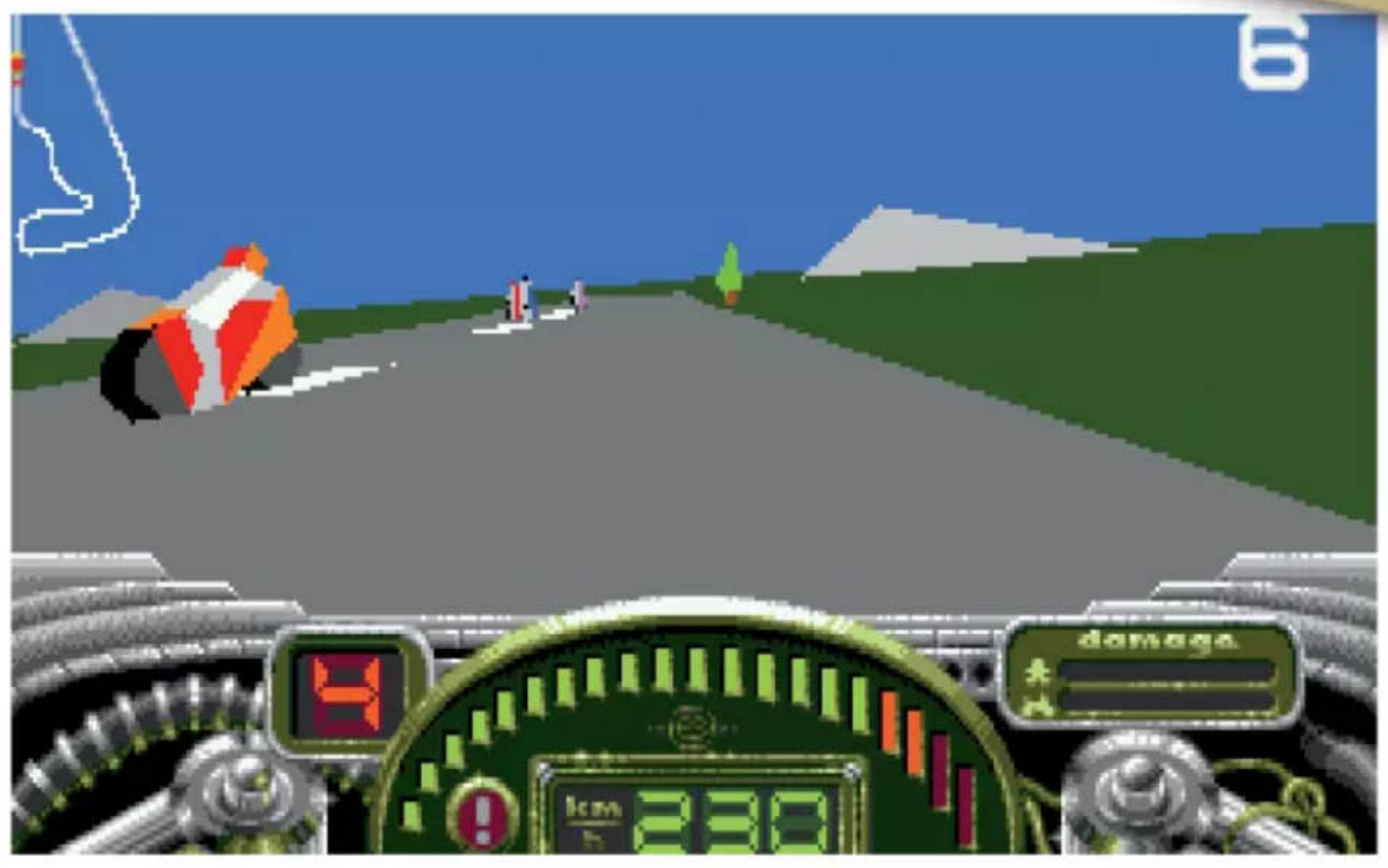
TIME BANDIT

» RELEASED: 1986 » PUBLISHED BY: MICRODEAL
» CREATED BY: BILL DUNLEVY AND HARRY LAFNEAR

4 If you're after a game that fuses elements of *Pac-Man*, *Bomberman*, *Gauntlet*, time travel and text adventures then you should track down *Time Bandit*. Debuting on the Tandy TRS-80 before being ported to the Amiga and ST, its authors, Bill Dunlevy and Harry Lafnear, set about refining it brilliantly with the extra power. As a treasure hunter, your mission was to travel to 16 distinct worlds to collect valuable artefacts. One of its neat touches is that many of the levels pay homage to classic arcade games. 'Shadowland', for example, is clearly a send-up of Namco's pill-chomping maze classic, *Pac-Man*.

“A MIX OF TRON AND BLADE RUNNER, WITH SOME GIGER-STYLE IMAGERY AND JEAN MICHEL JARRE TUNES THROWN IN”

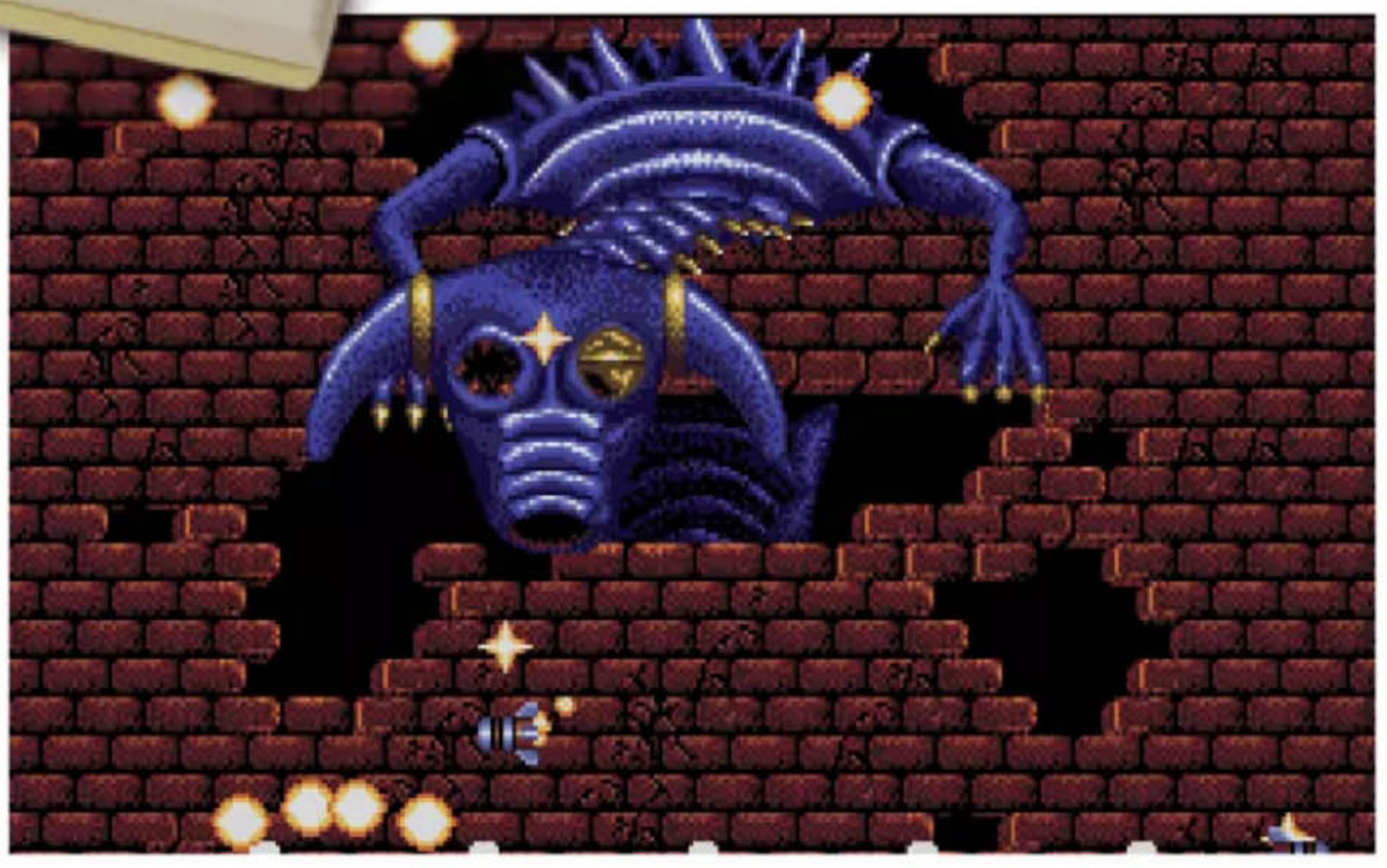
YOU REALLY NEED TO PLAY CAPTAIN BLOOD



NO SECOND PRIZE

» RELEASED: 1992 » PUBLISHED BY: THALION » CREATED BY: CHRIS JUNGEN

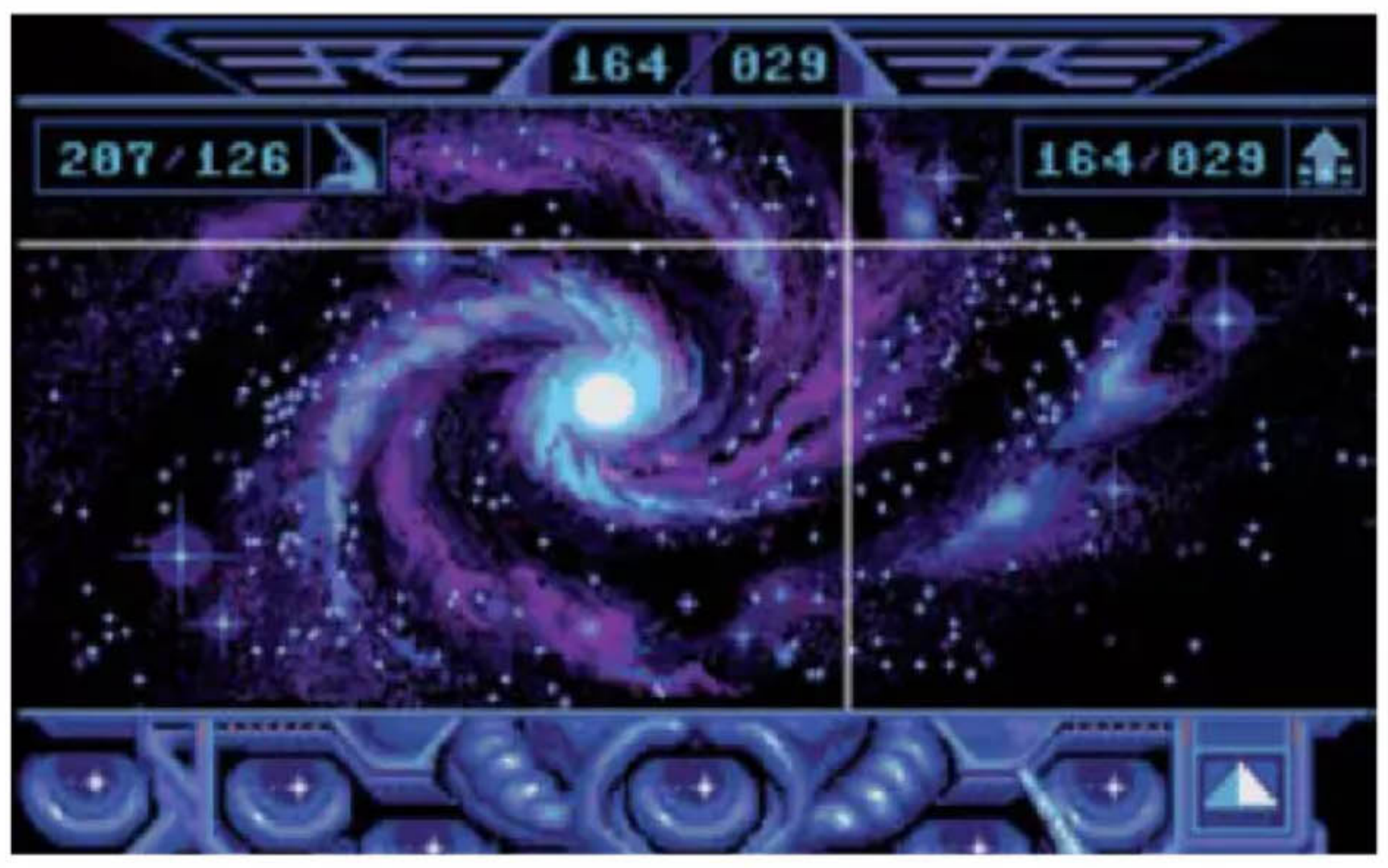
5 *No Second Prize* was a slick 3D motorbike racer that was clearly a few hundred CCs ahead of its contemporaries. The game featured six distinct drivers, 20 well-designed and diverse tracks and some staggeringly smooth scrolling. Bolstering its lavishness were its neat vector 3D graphics, a finely tuned difficulty curve and a sublime electro-rock soundtrack by one of the most established composers in the ST scene – oh and you could edit your own replays after each race, too (it was one of the earliest games to let you do that). If you're looking for a great alternative to the excellent *Stunt Car Racer* then seek this out.



LETHAL XCESS

» RELEASED: 1991 » PUBLISHED BY: ECLIPSE SOFTWARE » CREATED BY: CLAUS FREIN

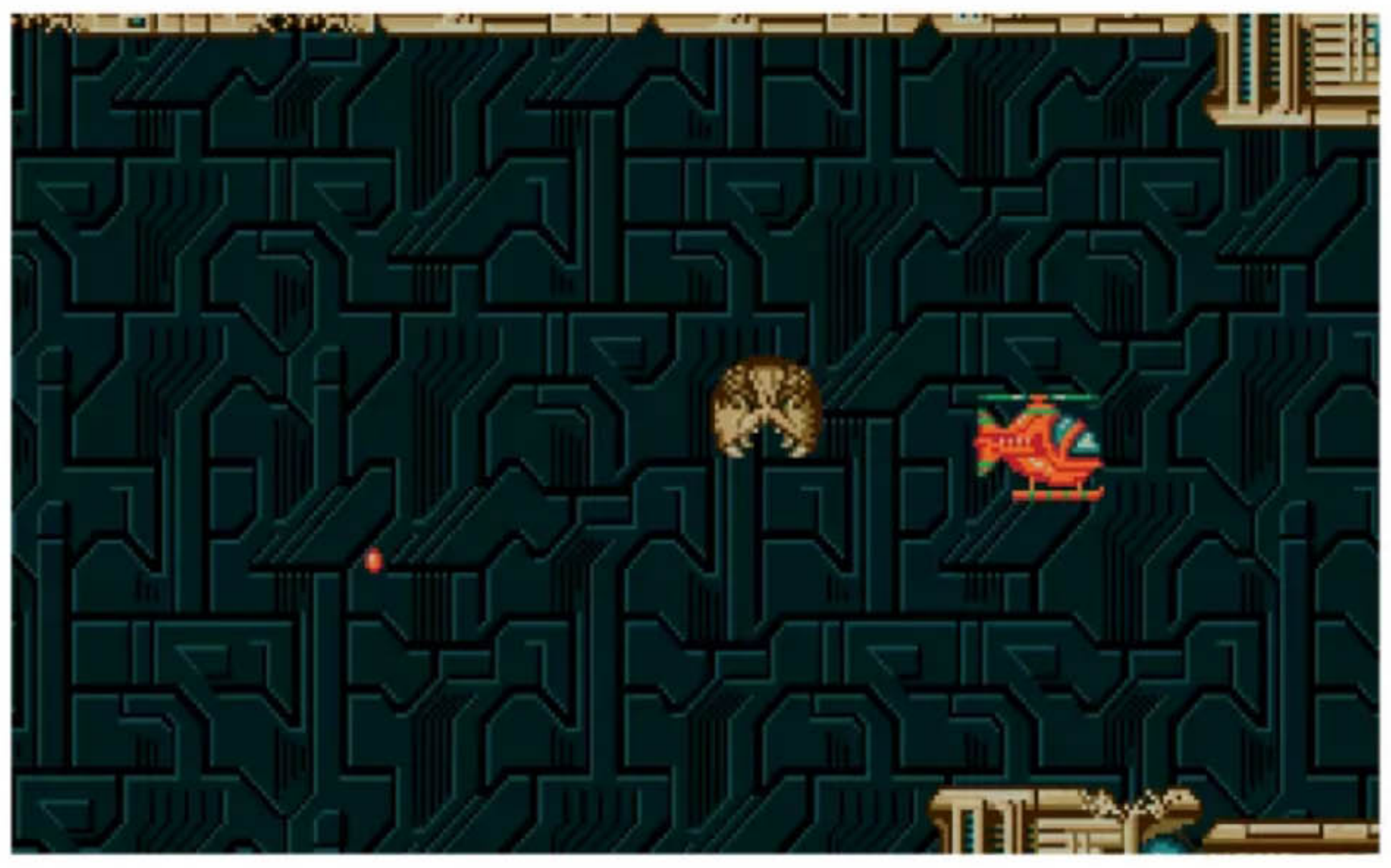
6 Yet another ST classic, *Lethal Xcess* is a masterpiece on the ST that pushes its technical boundaries to the limits. While there exist far better examples of the top-down vertical shooter (we've got a making-of one of them in this issue), *Lethal Xcess's* greedy looking sprites, and frenetic kill-everything-that-moves gameplay, struck a chord with ST owners. A sequel to another underappreciated top-down vertical shooter called *Wings Of Death*, *Lethal Xcess* boasted a neat two-player mode and a novel power-up system that allowed you to power up your power-ups. A highly inventive shoot-'em-up that you really should play.



CAPTAIN BLOOD

» RELEASED: 1988 » PUBLISHED BY: MINDSCAPE » CREATED BY: PHILIPPE ULRICH

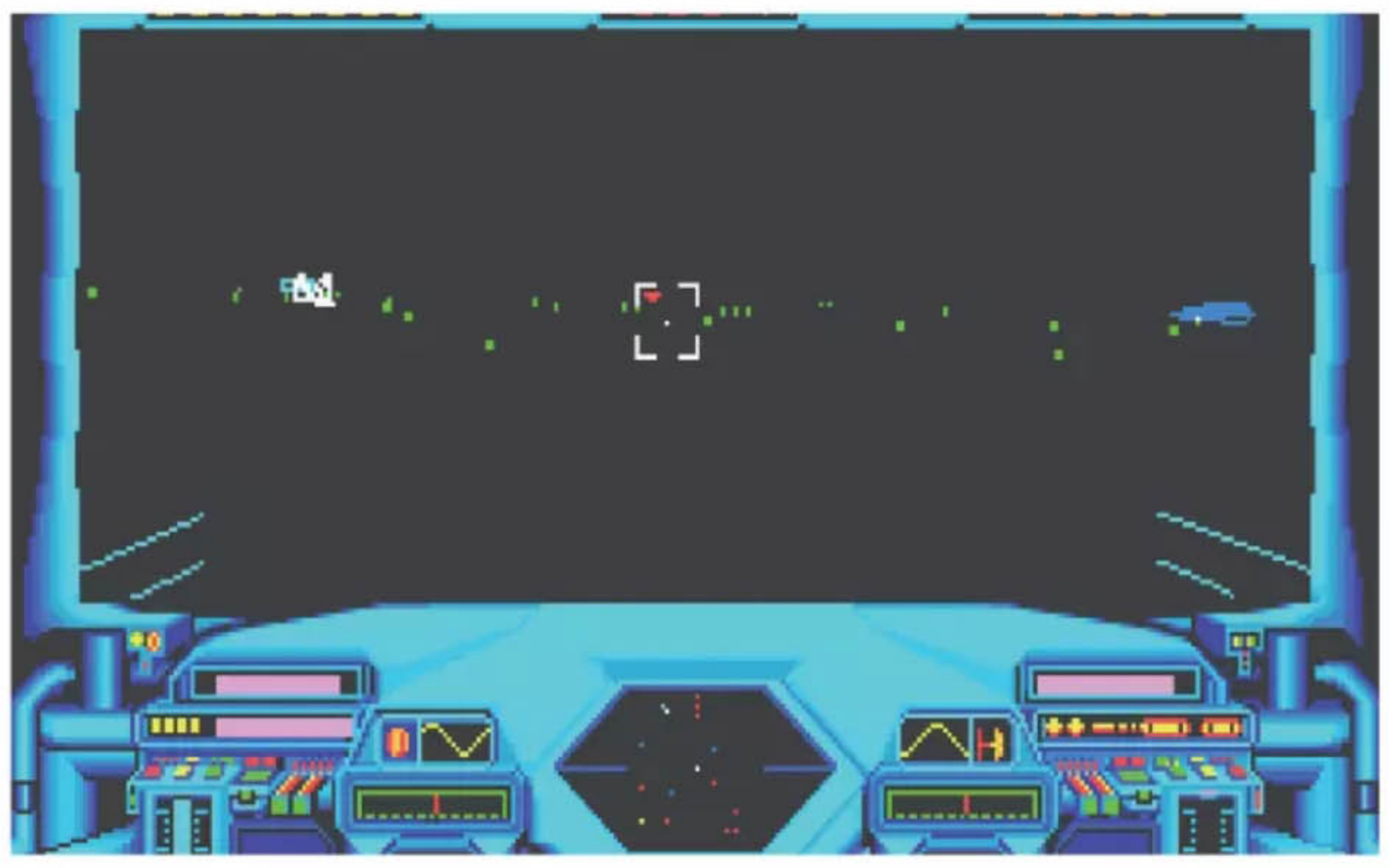
7 The prospect of getting sucked into your own videogame is one that few programmers – other than the team behind *Rumble Roses* – would relish, but this is the dilemma facing Captain Blood, and that's only the start of his problems. After being zapped inside his own binary, Blood discovers he's been cloned and each of his doppelgangers are leeching off his life-mojo. It's up to you to travel the galaxy, decipher peculiar alien text and track your targets before it's too late. A mix of *Tron* and *Blade Runner*, with some Giger-style imagery and Jean Michel Jarre tunes thrown in, *Captain Blood* is a gloomy but atmospheric RPG classic.



BLOOD MONEY

» RELEASED: 1989 » PUBLISHED BY: PSYGNOSIS » CREATED BY: DAVID JONES

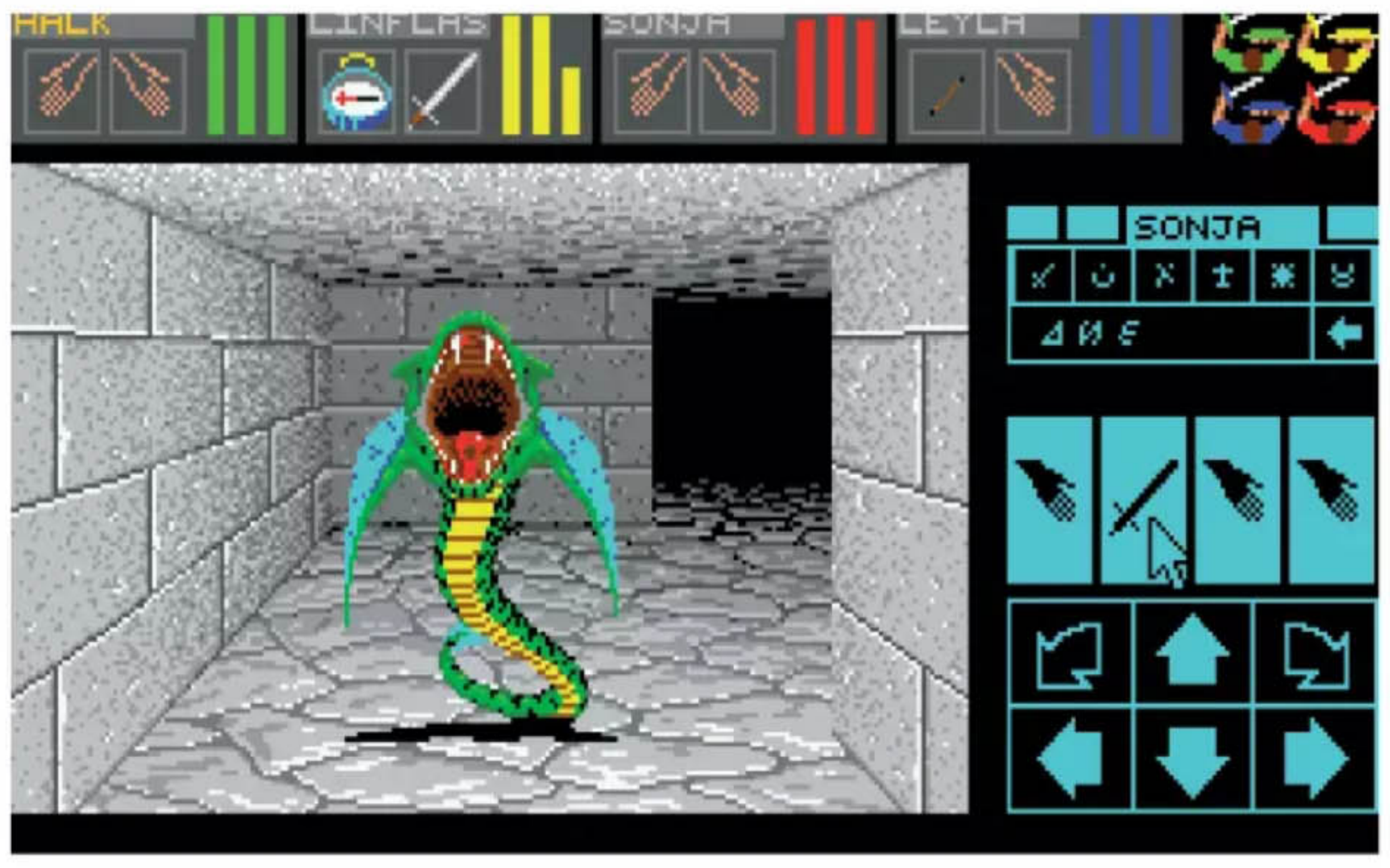
8 We were toying with putting *R-Type* on this list, but felt David Jones' *Blood Money* was the marginally better side-scrolling blaster. It's smoother, looks amazing and has an innovative gameplay mechanic where certain enemies would rather pilfer your pockets than cause you damage. Anyway, sticking with the *R-Type* comparisons, *Blood Money* can best be described as Irem's game but set underwater. Controlling a chubby looking red submarine, your mission was simple: avoid hitting the walls, shoot anything that moves, collect the coins and kit out your vessel with all manner of power-ups. *Blood Money* is simple, sublime fun.



STARGLIDER

» RELEASED: 1986 » PUBLISHED BY: ARGONAUT SOFTWARE » CREATED BY: JEZ SAN

9 One of Argonaut Software's earliest games, *Starglider* clearly has the company's 3D vector stamp all over it. Your mission was to traverse the planet of Novenia and blast away any and all alien craft from inside your AGAV or Airborne Ground Attack Vehicle. Inspired by Jez San's love of Atari's brilliant *Star Wars* coin-op, *Starglider* became a high-profile release and a big hit after it appeared in cut-down-for-telly-competition form on popular children's television show *Get Fresh*. Packed with a 64-page novella, which was scribed by fiction author James Follett, *Starglider* was an engaging space blaster that remains great fun today.



DUNGEON MASTER

» RELEASED: 1987 » PUBLISHED BY: FTL GAMES » CREATED BY: DENNIS WALKER, DOUG BELL

10 A sprawling and flawlessly designed first-person RPG that oozed atmosphere, bagged itself a trove of awards and went on to influence a swathe of classic RPG brilliance, including the likes of *Lands Of Lore* and *Eye Of The Beholder*. The game is a brilliant portent of 3D labyrinthine levels, wonderfully imaginative creature designs and accessible RPG elements. It's brilliantly intuitive mouse-controlled interface, glorious colourful visuals, fantastic strident score and real-time combat, helped to make it a huge success around the world. The game has since spawned four sequels, including the Saturn exclusive *Dungeon Master Nexus*.

ATARI
520ST

RESTROOM
ALTHOUGH THEY ARE EQUIPPED FOR ALL TYPES OF ANATOMIES THEY'RE NOT VERY PLEASANT.

Food
Armor
H.P. 5349
Food 431
Gold 3932
Command: South

02

03

04

ATARI ST
AND THE REST...

Often seen as a poor man's Amiga, the Atari ST nevertheless had a fantastic assortment of games available for it. Here then is a selection of some of its incredibly varied titles.

SCORE
TARGETS
SHELL
LEVEL

10

1 B.A.T.
2 Questron
3 Harley-Davidson
4 Technocop
5 Advanced Ski Simulator
6 Weird Dreams
7 Cabal
8 Operation Wolf
9 Zarch
10 Encounter
11 Black Lamp
12 Overlander
13 Lancelot
14 F29 Retaliator
15 R-Type
16 Ultima VI: The False Prophet
17 Armalyte
18 Nebulus
19 Goal!
20 Yolanda
21 The Adventures of Robin Hood
22 TinTin on the Moon
23 Dark Side
24 IK+
25 The Sentinel
26 Kid Gloves
27 Verminator
28 Licence to Kill
29 Phantasm
30 Video Kid
31 E-Motion
32 Jack Nicklaus Championship Golf
33 Wild Streets
34 Carrier Command
35 Nitro
36 Thrust
37 Xenon 2: Megablast
38 Robocop
39 The King of Chicago
40 Exolon
41 Pac-Mania
42 Treasure Island Dizzy
43 9 Lives
44 Cadaver
45 Onslaught
46 Warlock
47 The Pawn
48 Fred
49 Sleepwalker
50 Arctic Fox
51 Eye of Horus
52 Tracker
53 Warhawk
54 Last Ninja 3
55 Neighbours
56 Zany Golf
57 Heimdall
58 Jinxter
59 Pipe Mania
60 Tempest
61 Shinobi
62 Wanted
63 Spindizzy Worlds
64 Rogue Trooper
65 Fire & Forget II
66 Murder
67 Super Skweek
68 Life and Death
69 Flood
70 Corporation
71 Northstar
72 Helter Skelter
73 TNT
74 Defender of the Crown
75 Tennis Cup
76 Oids
77 Stardust
78 Last Duel
79 Gauntlet
80 Knightmare
81 Wacky Darts
82 Jaws
83 Day of the Pharaoh
84 Pang
85 ShadowGate
86 Ivanhoe
87 Vindicators

martor
Dupre
Shamino
Iolo
PORTRAIT disk in any drive.
Please insert the PLAYER disk in any drive.
martor:
Swhat?

16

17

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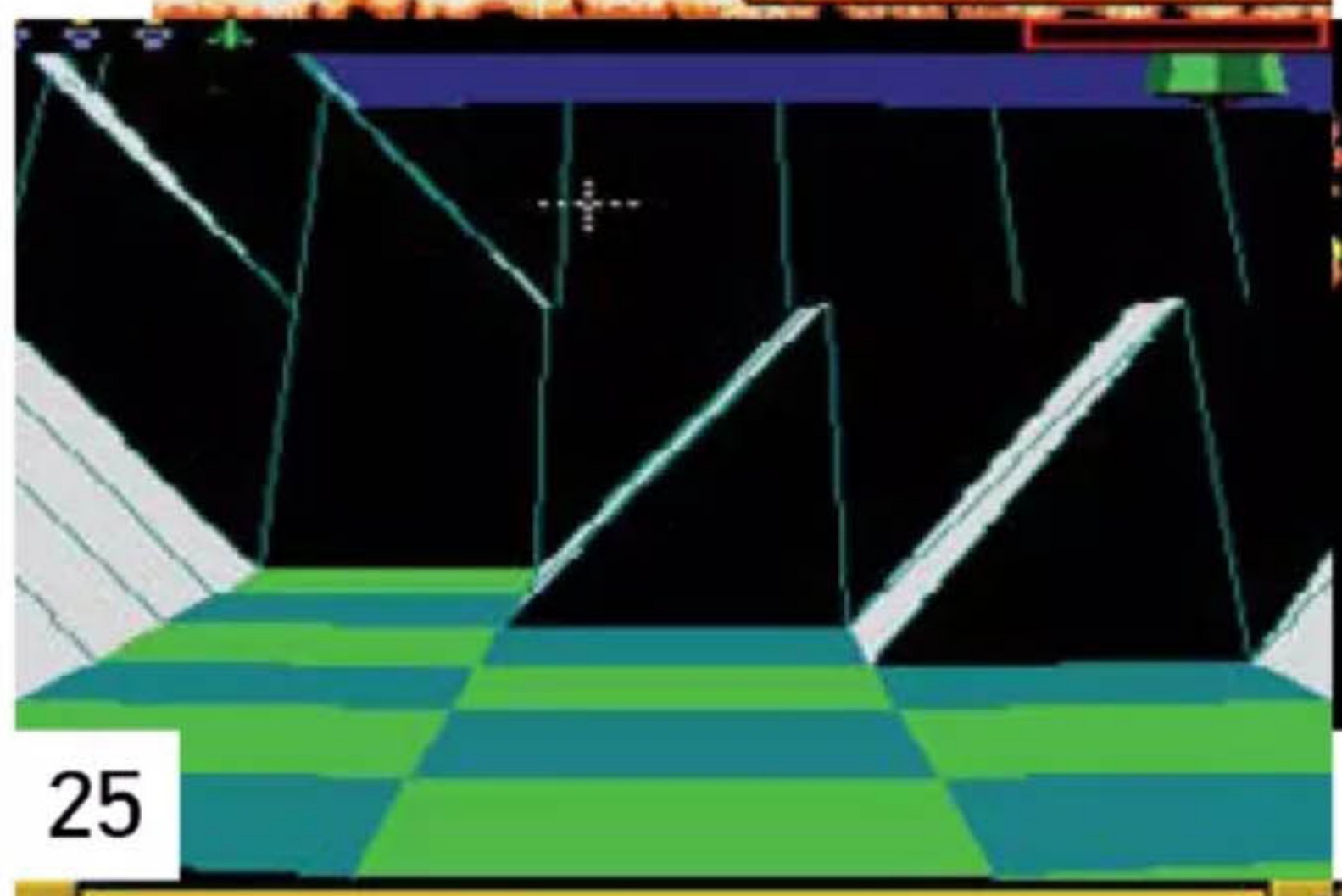

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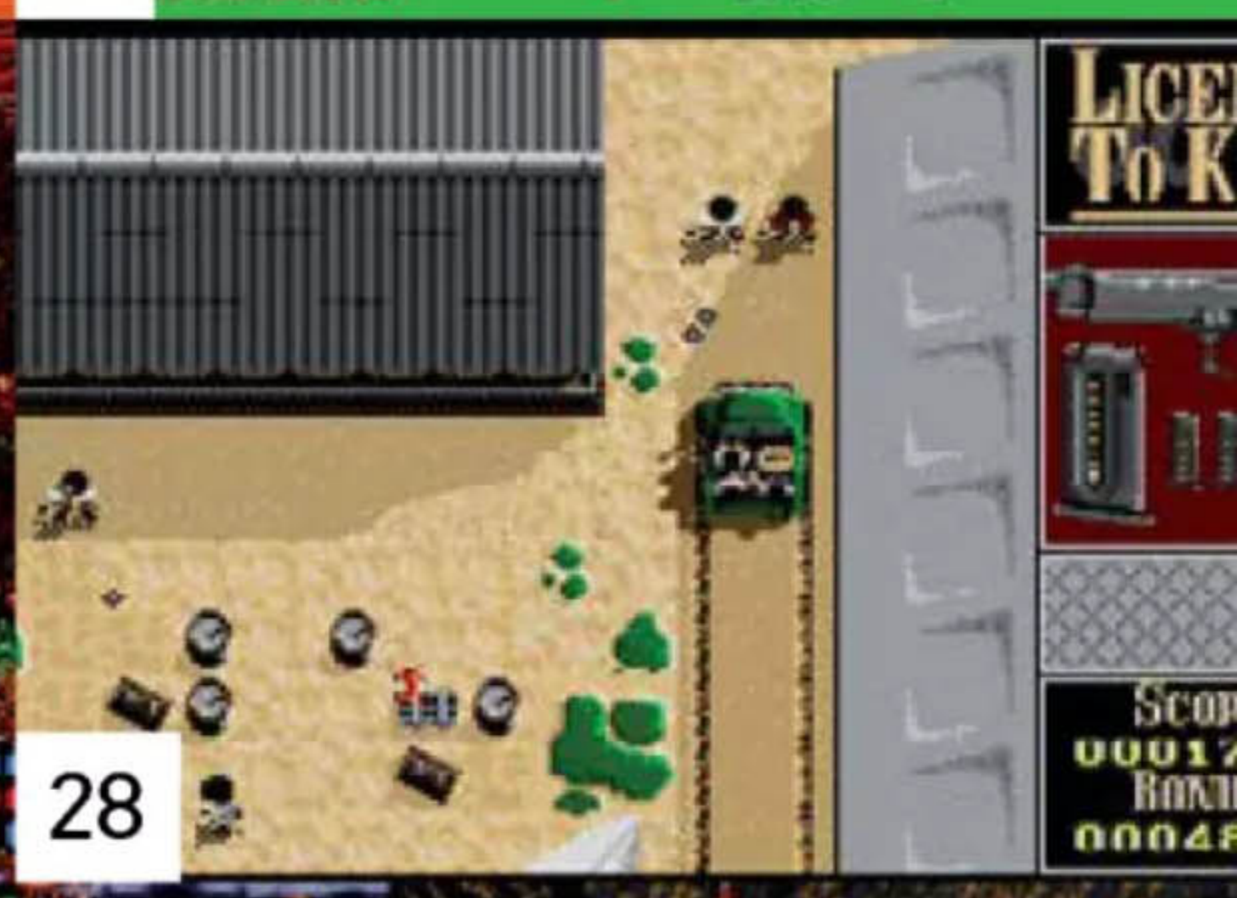


28

MANTA FIGHTERS
ON FLIGHT DECK
IN HANGER

34

GAS 1930
GAS

35

FUEL
LIVES
SCORE

36

37

score:1111
hi-score:1111

43

DAY 1
CAVERN

44

45

46

MOVE
COMBAT
CENTRE
OPTIONS
PAUSE
LOAD
SAVE
QUIT
Scout
SETUP
PLAY

52

53

USING
000075

54

Neighbours

55

61

62

Tutorial
Spindizzy

63

64

DAMAGE
EQUIPMENT

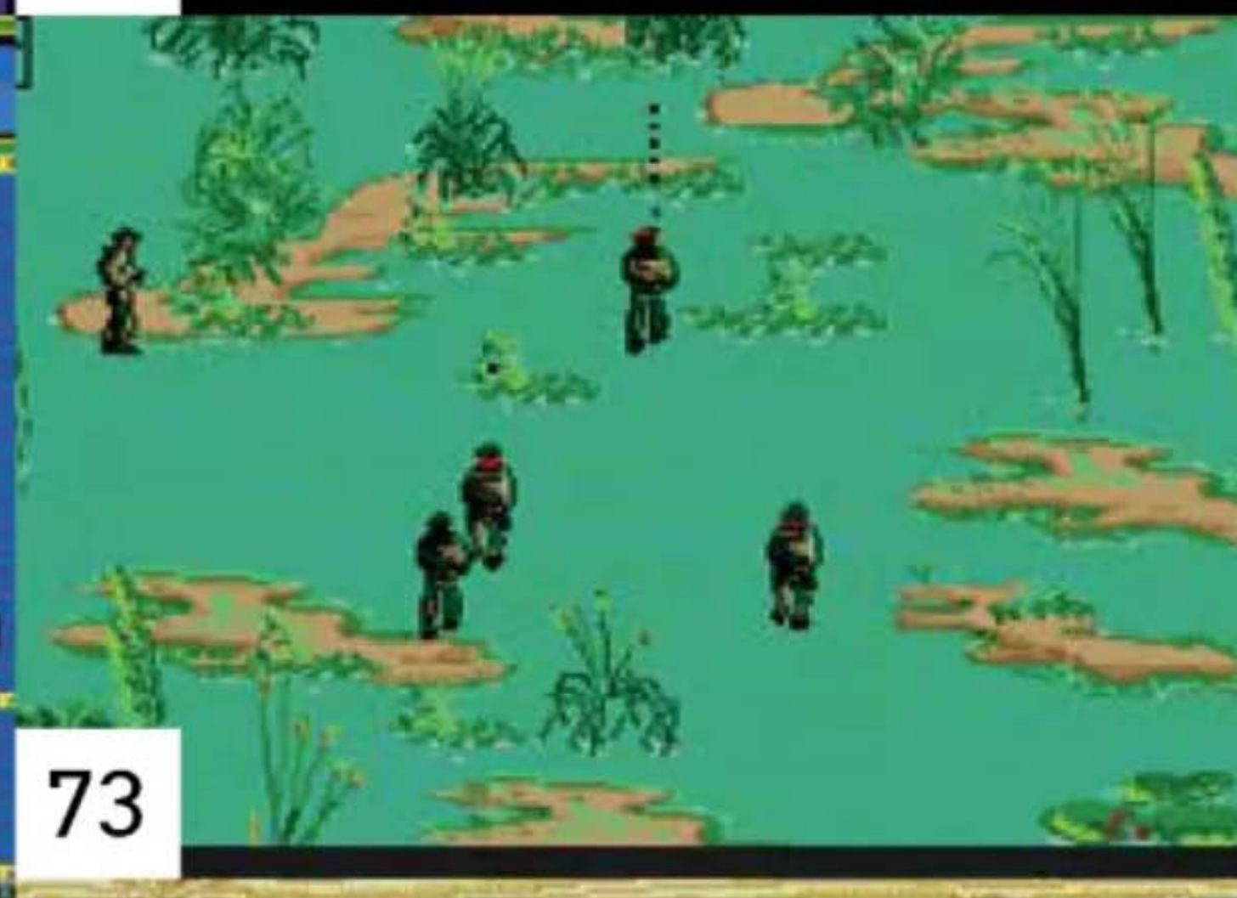
70

SCORE 000600 MEN 3

71

BONUS 02500
EXTRA
EXTRA
BONUS 00000

72



73

GAUNTLET
LEVEL 8
WARRIOR SCORE HEALTH
VALKYRIE SCORE HEALTH
WIZARD SCORE HEALTH
ELF SCORE HEALTH

79

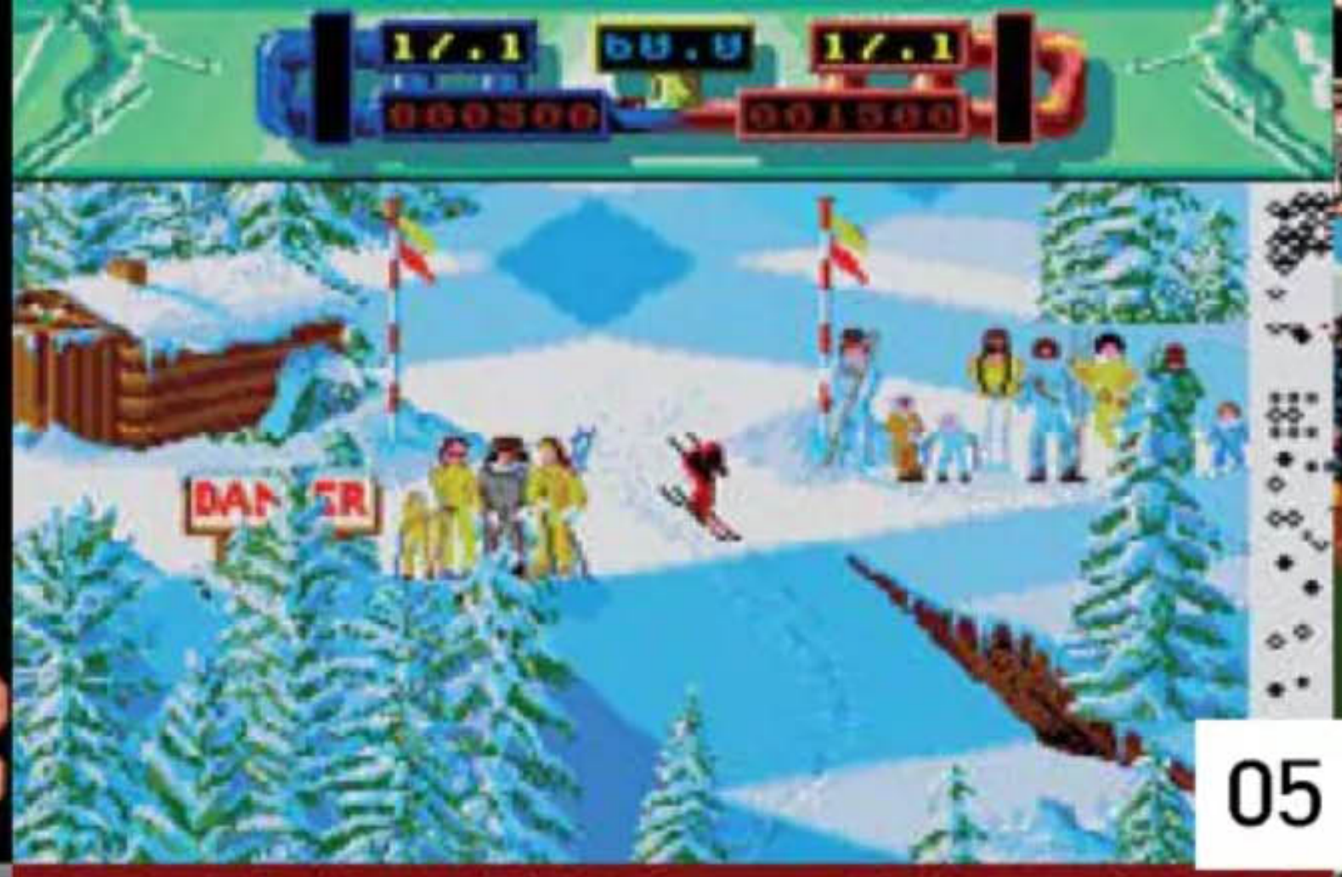
80

TIME
AUTO
SCORE

81

82

Special thanks to AtariLegend.com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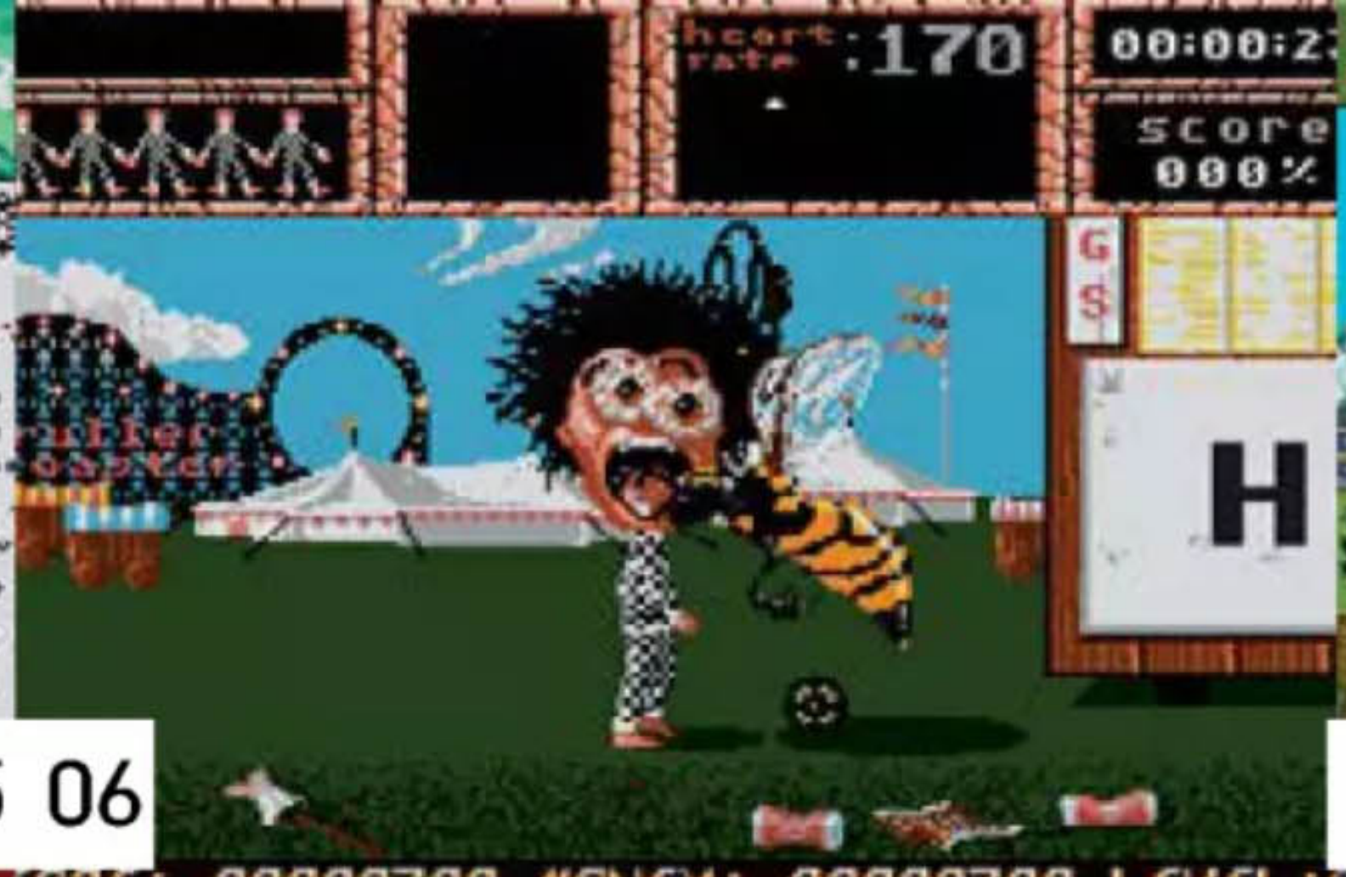
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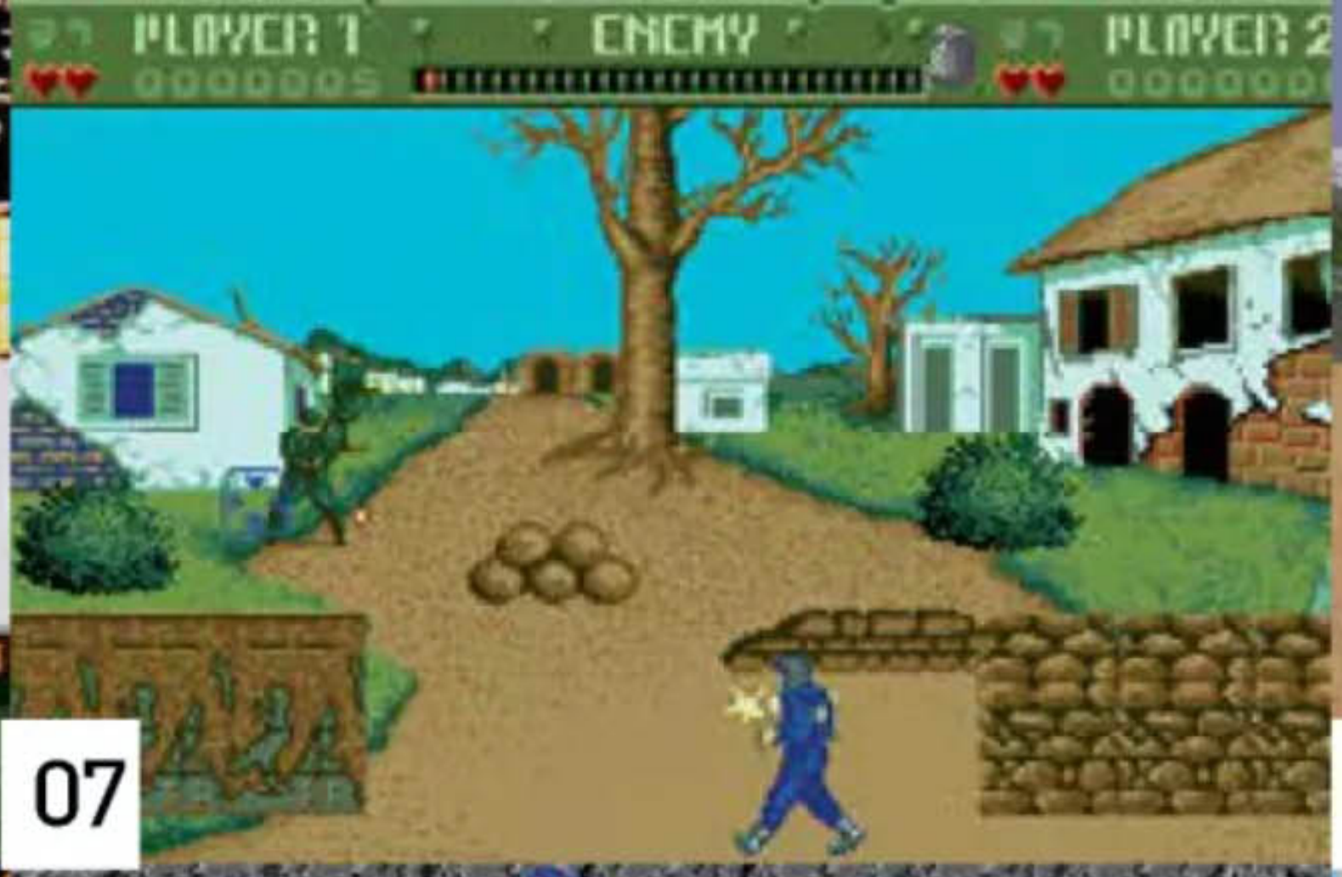
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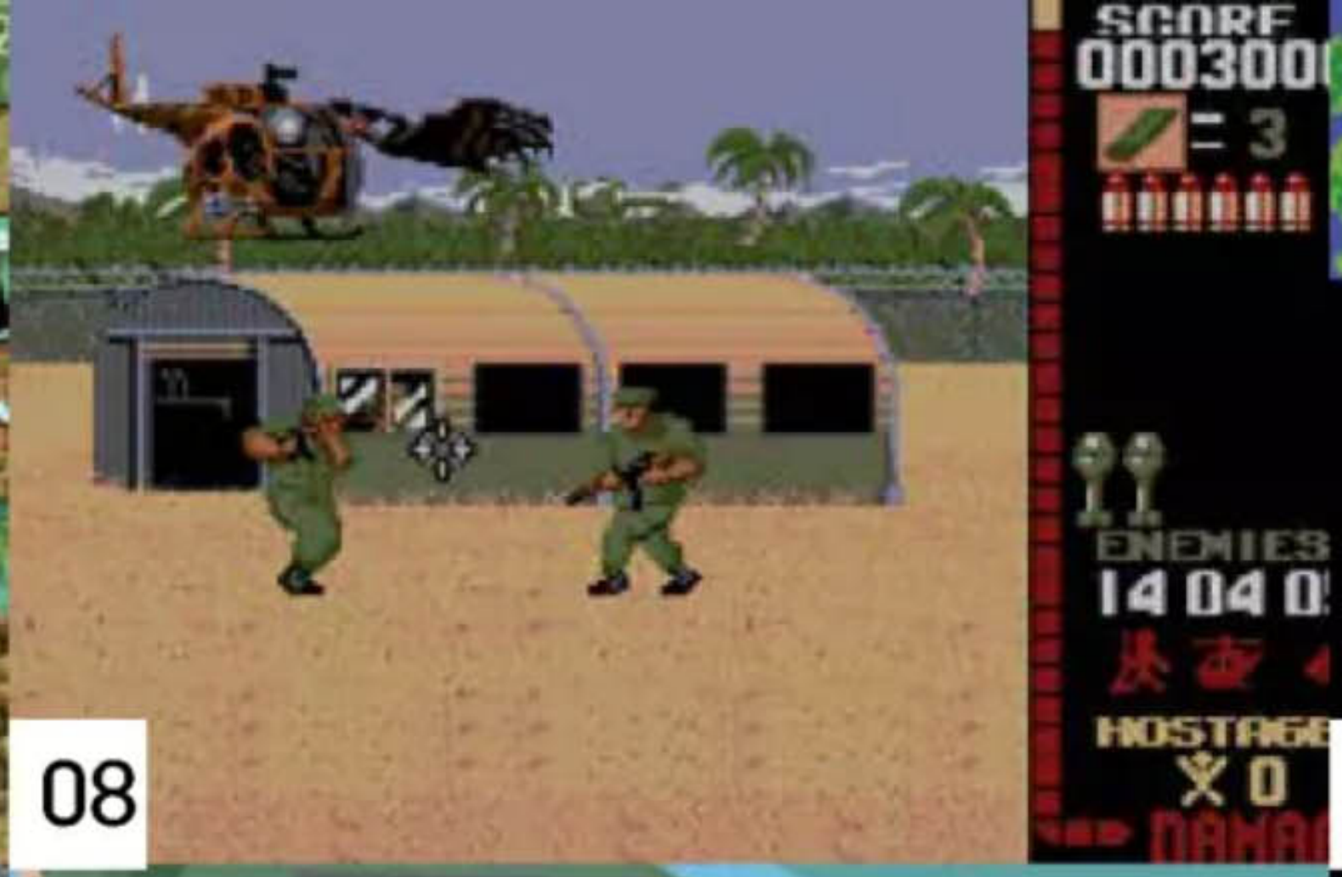
PLAYER 1
ENEMY
PLAYER 2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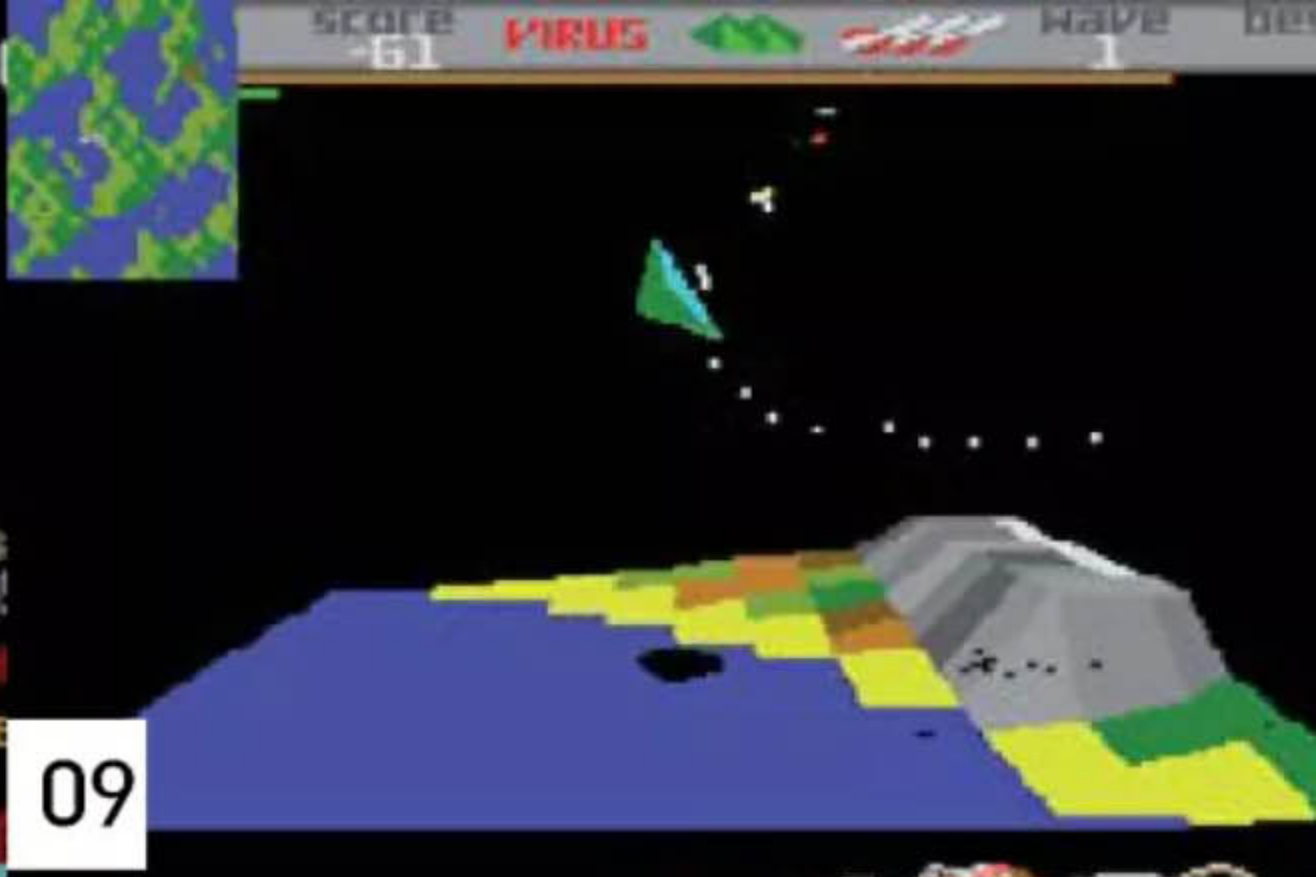
SCORE 000300
ENEMIES
HOSTAGE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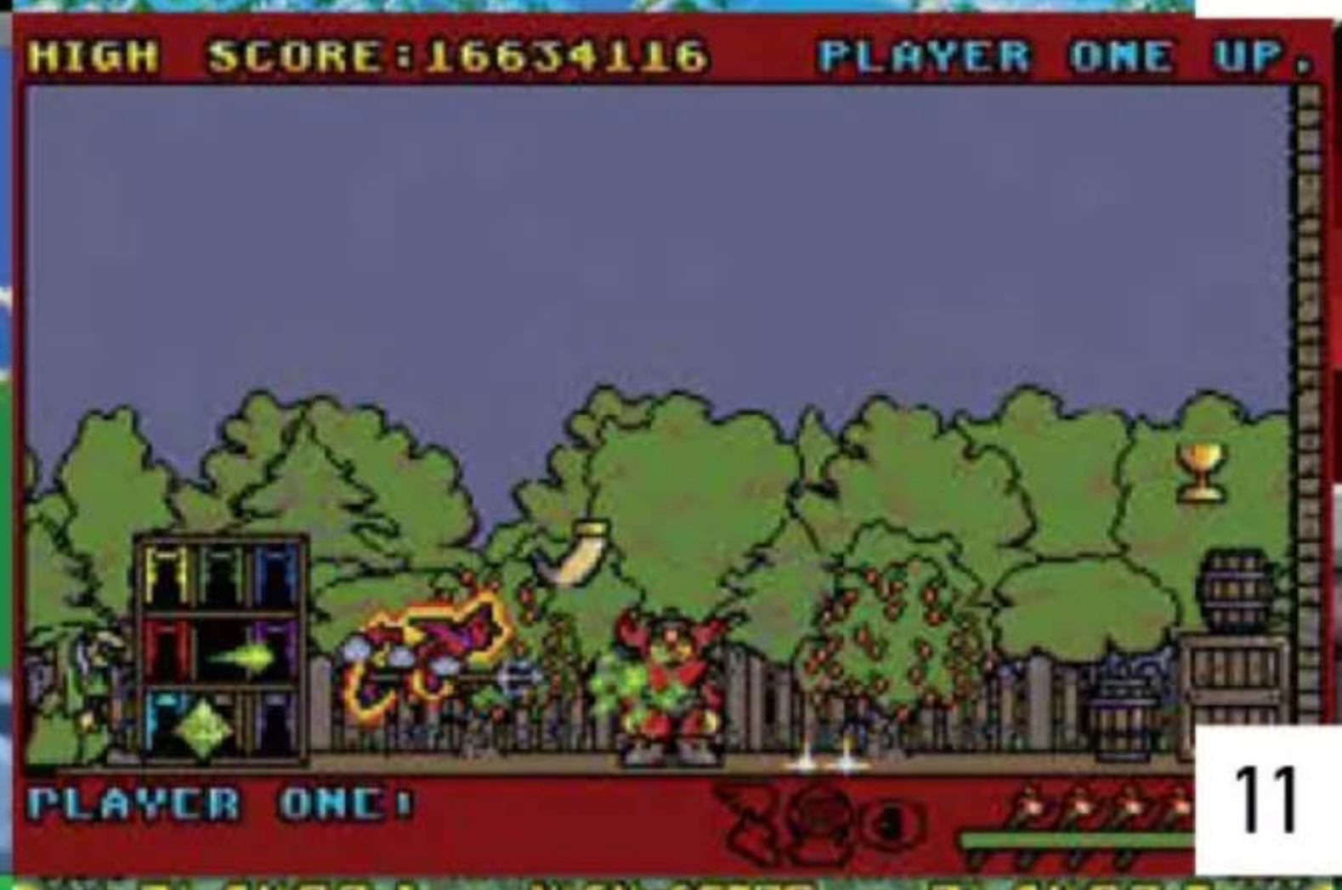
score
VIRUS
Wave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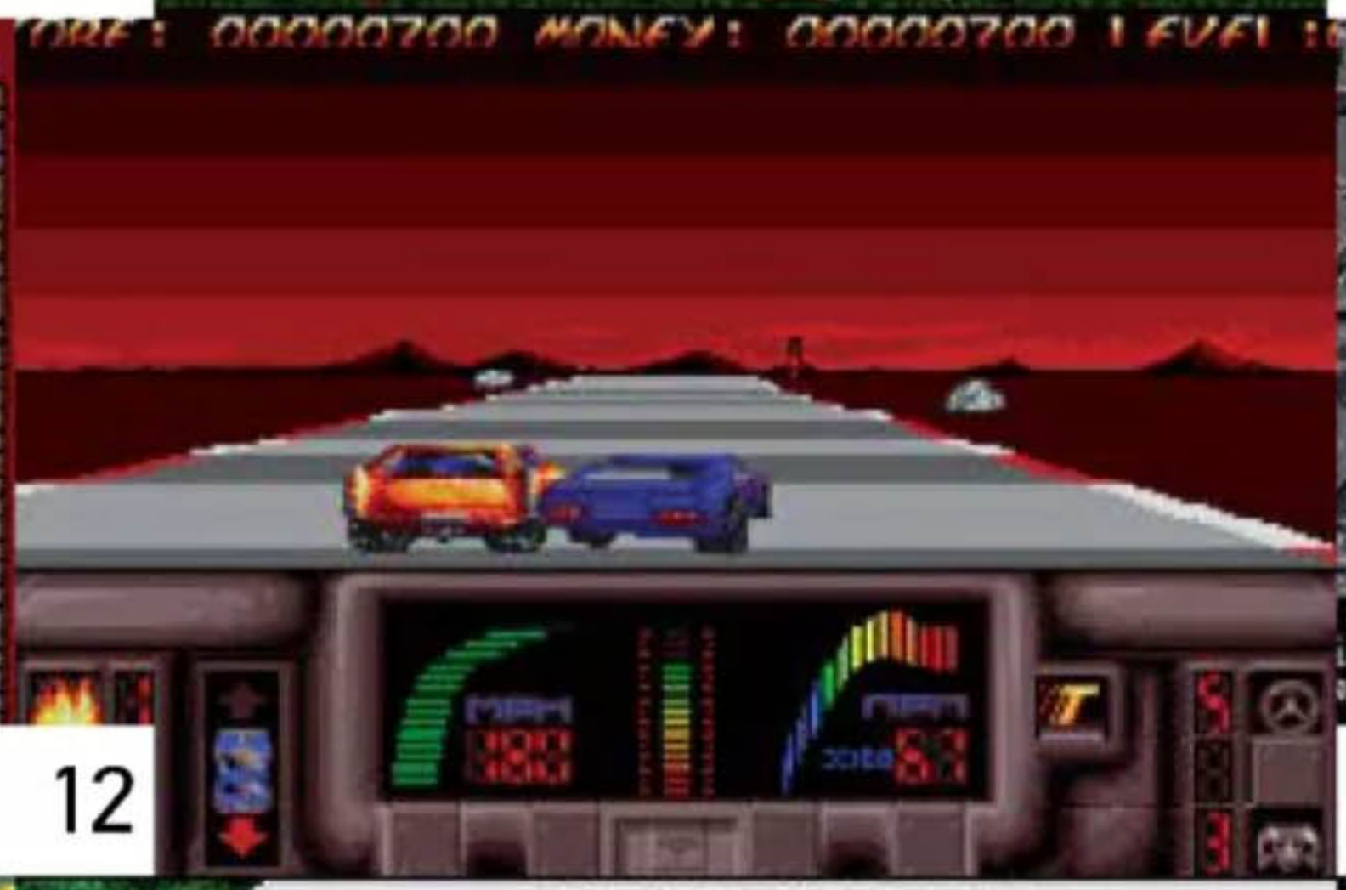
HIGH SCORE:16634116 PLAYER ONE UP.
PLAYER ONE: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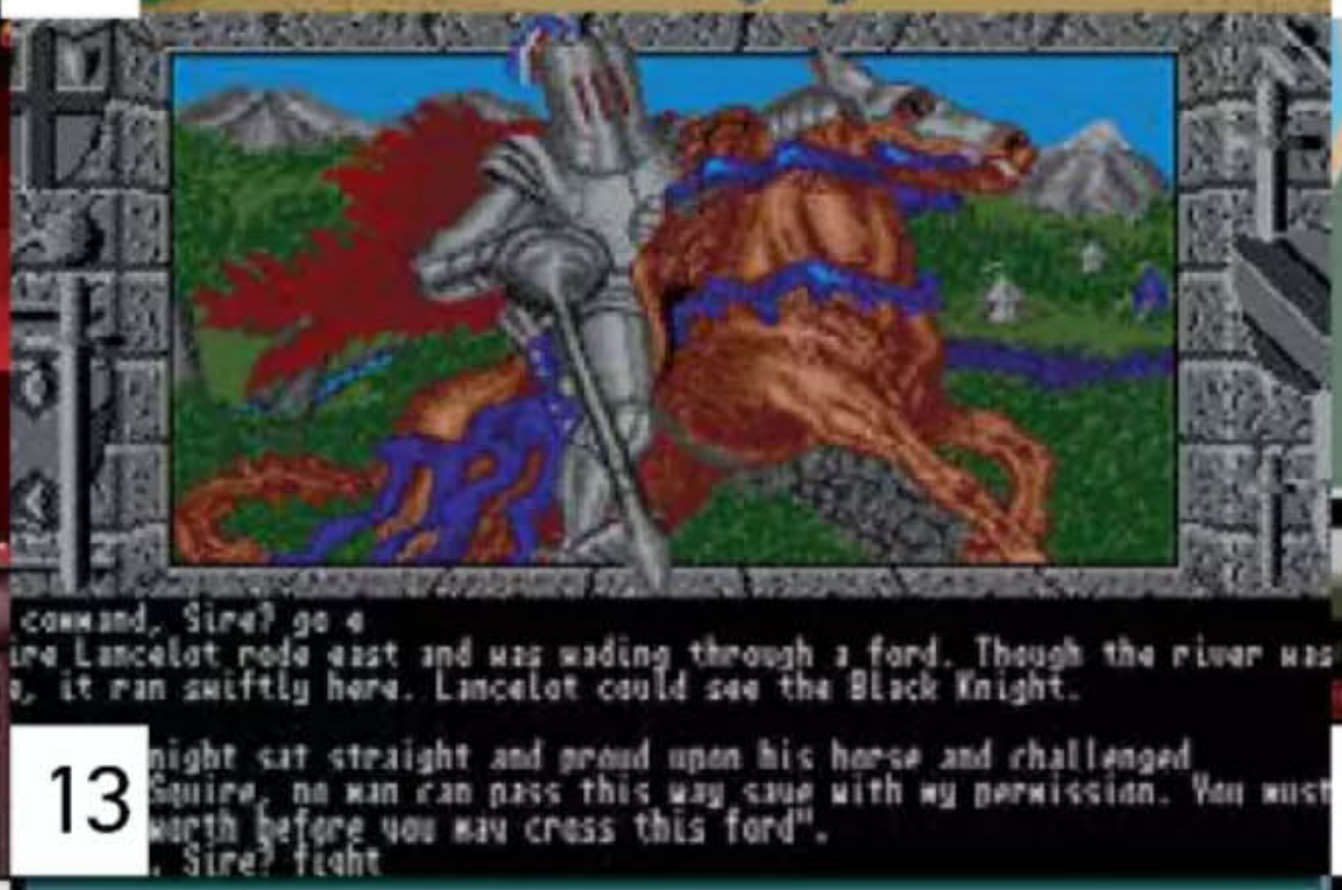
MONEY: 00000700 LEVEL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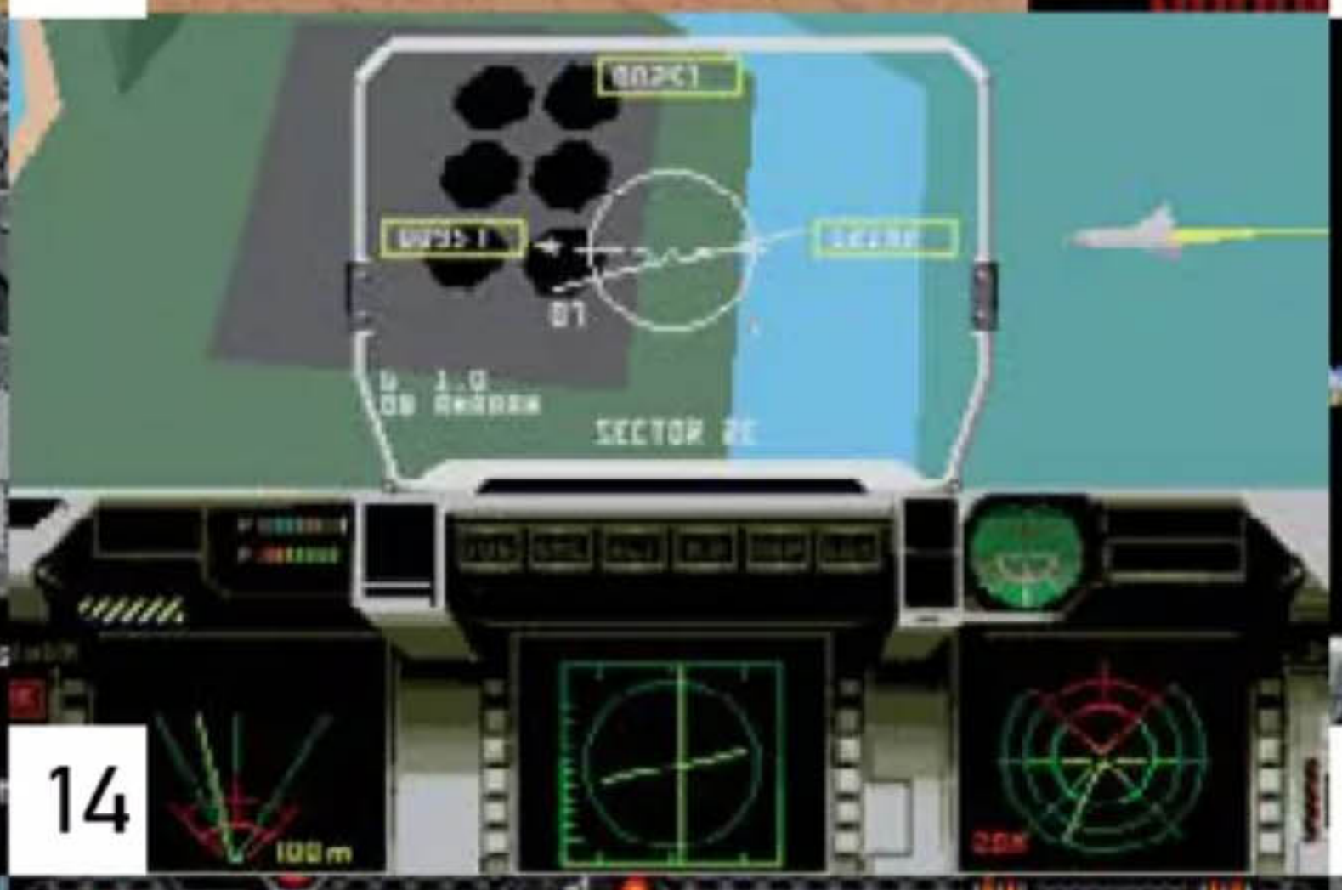
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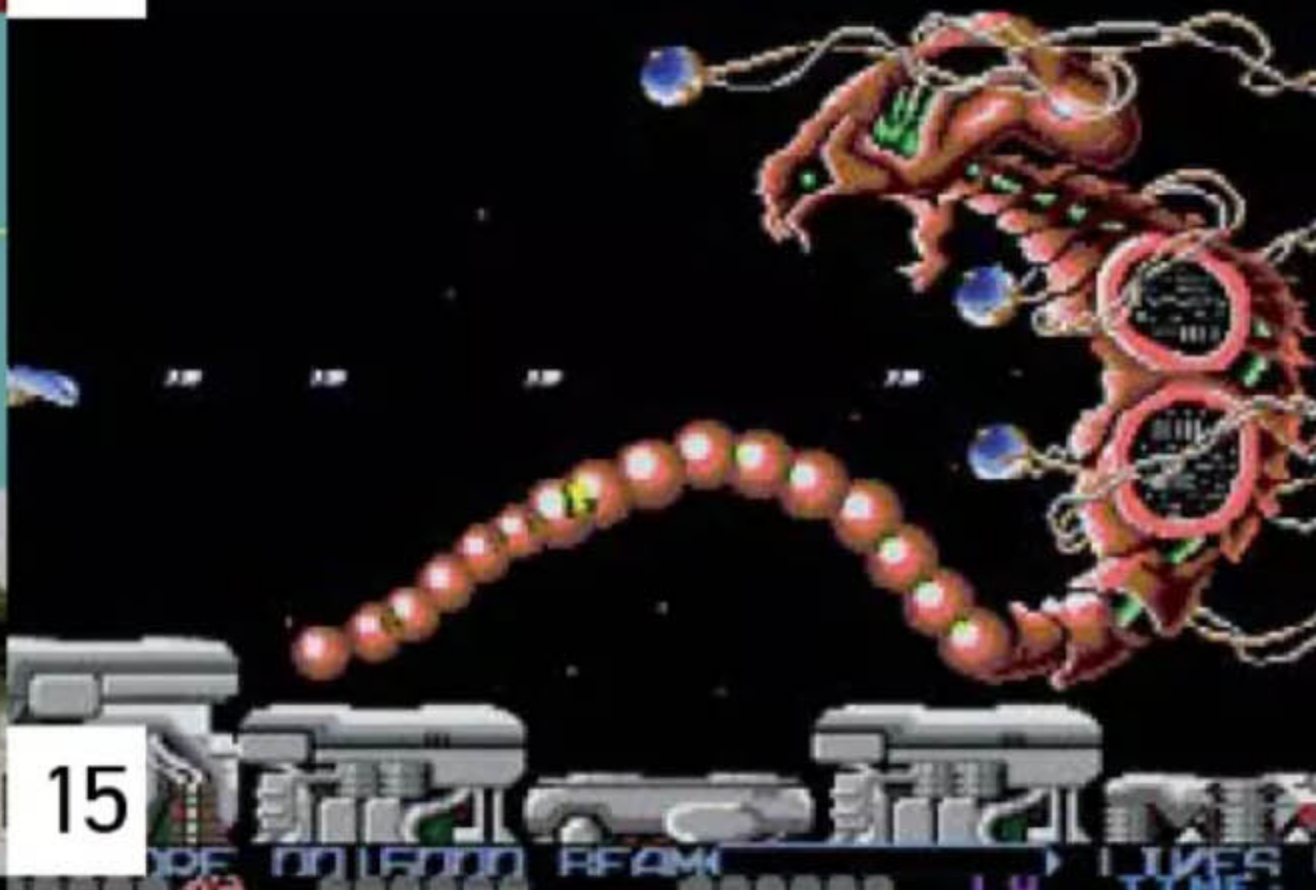
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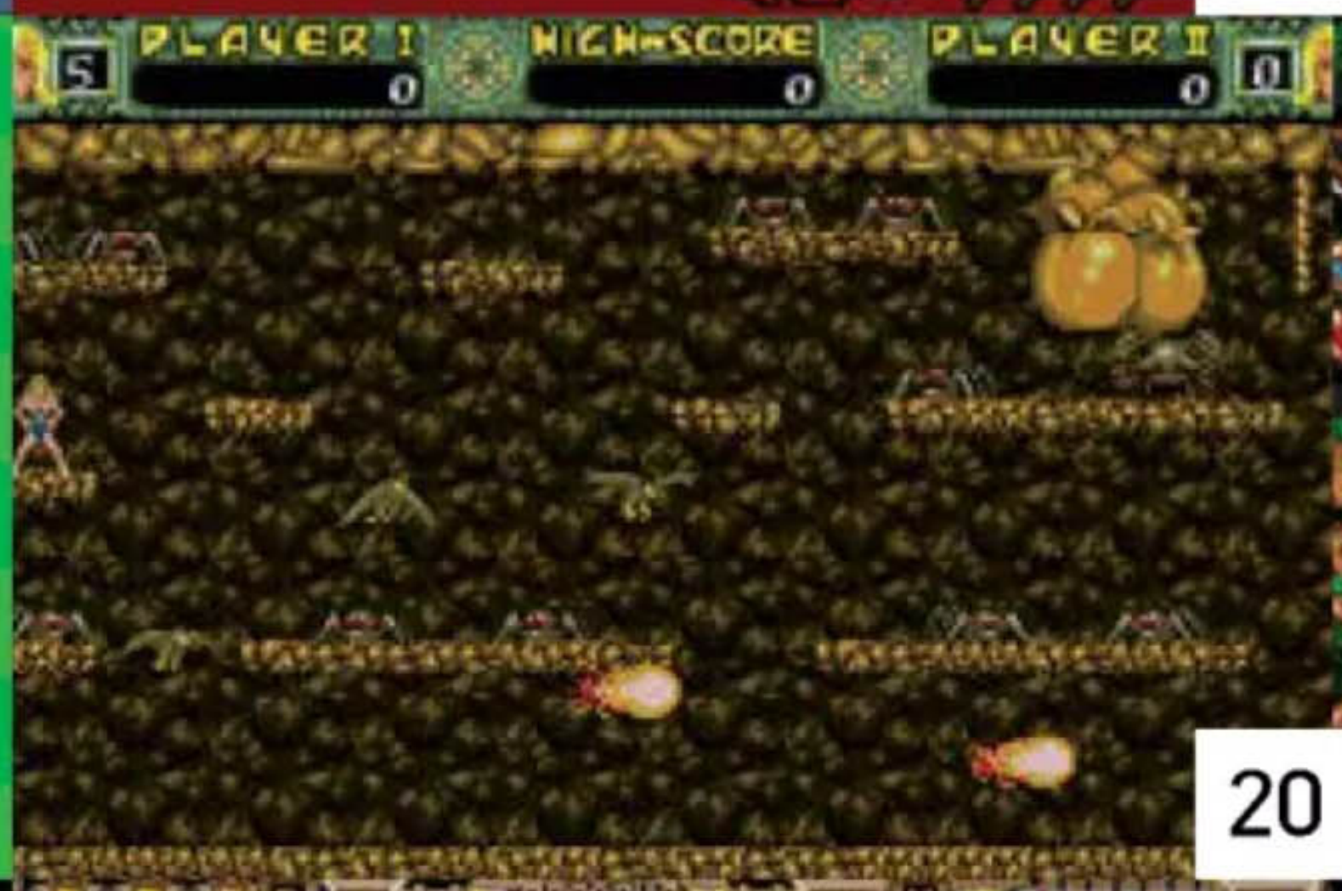
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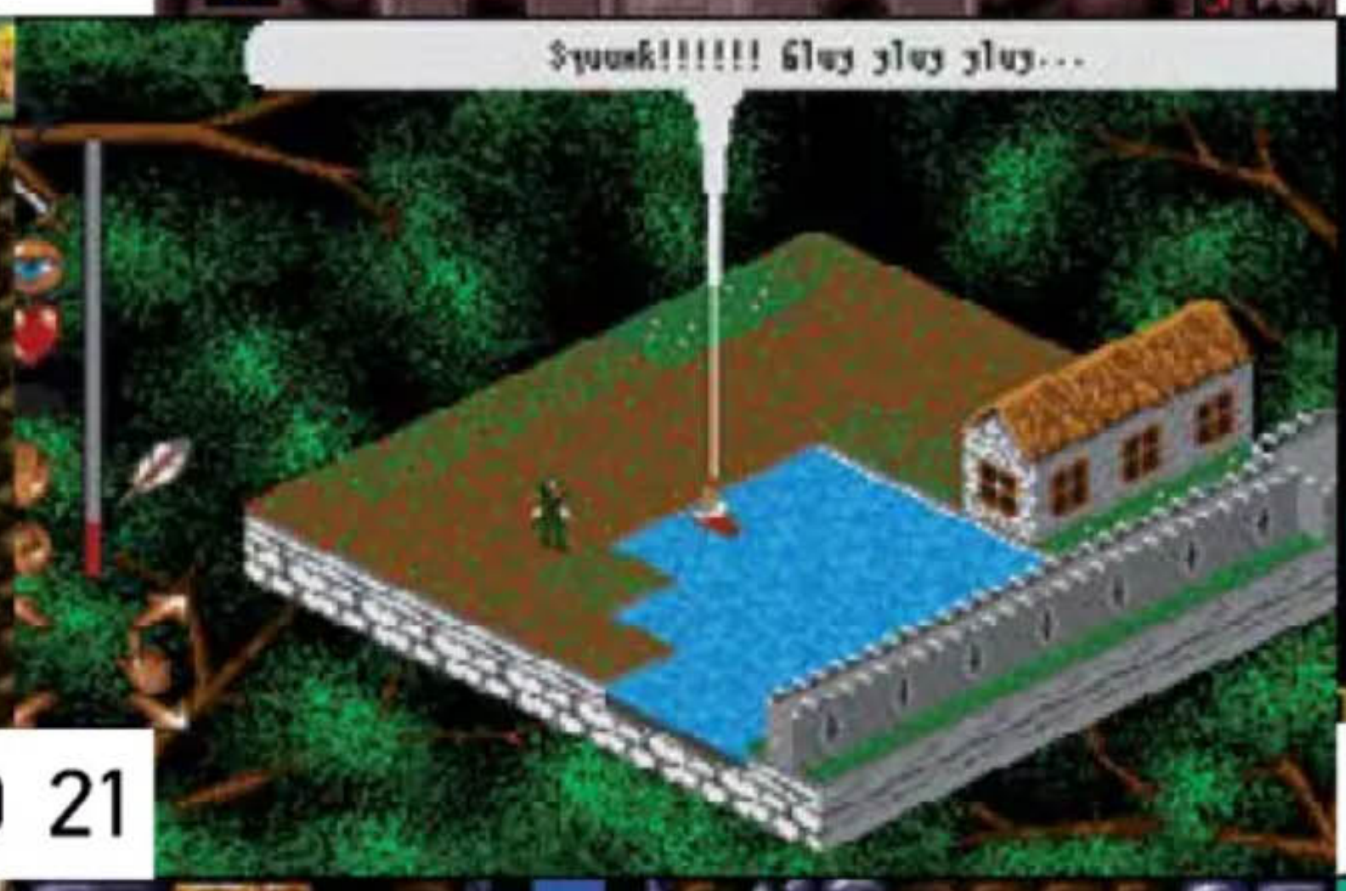
PLAYER 1
HIGHSCORE
PLAYER 2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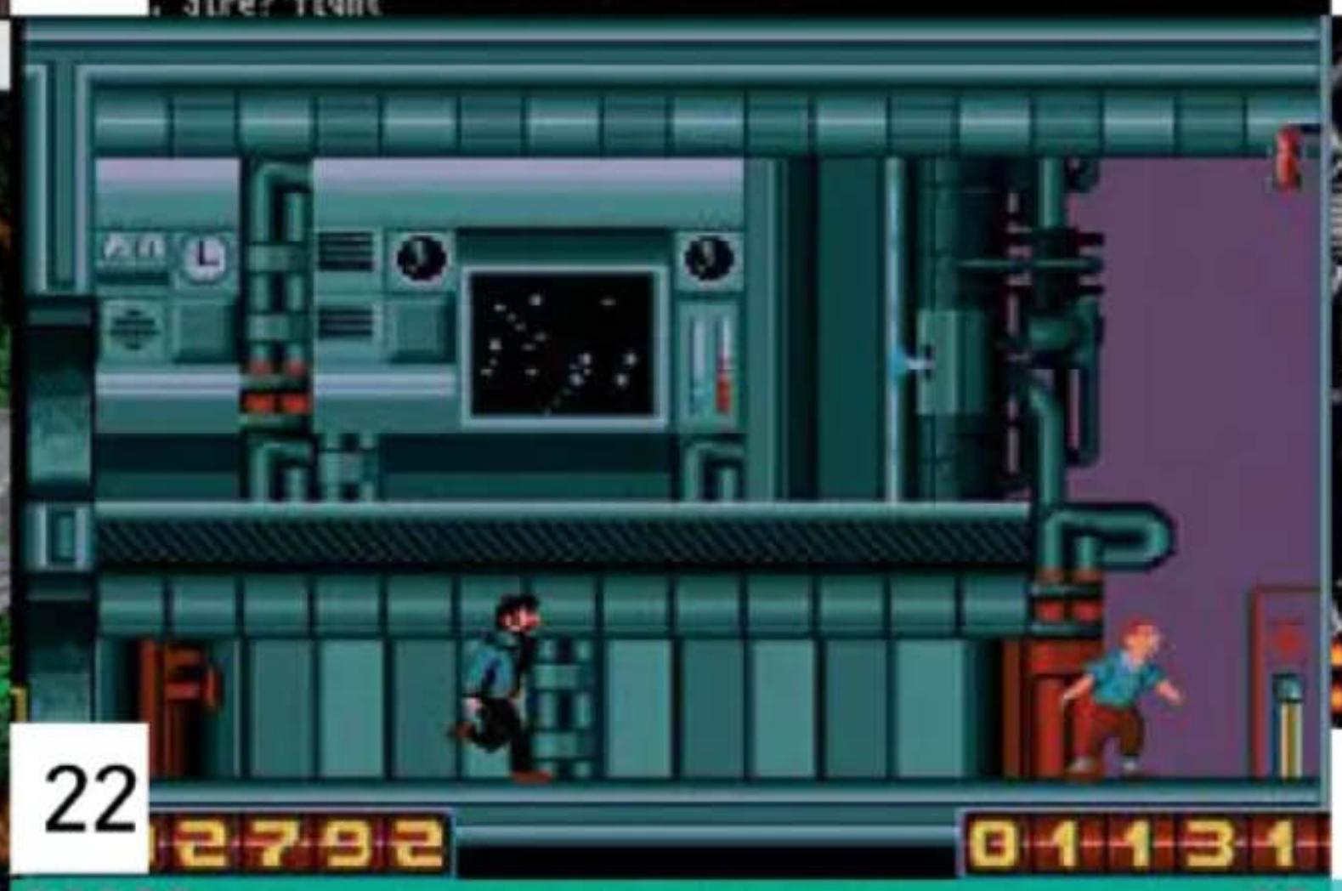
Squeek!!!!!! Glug glug glug...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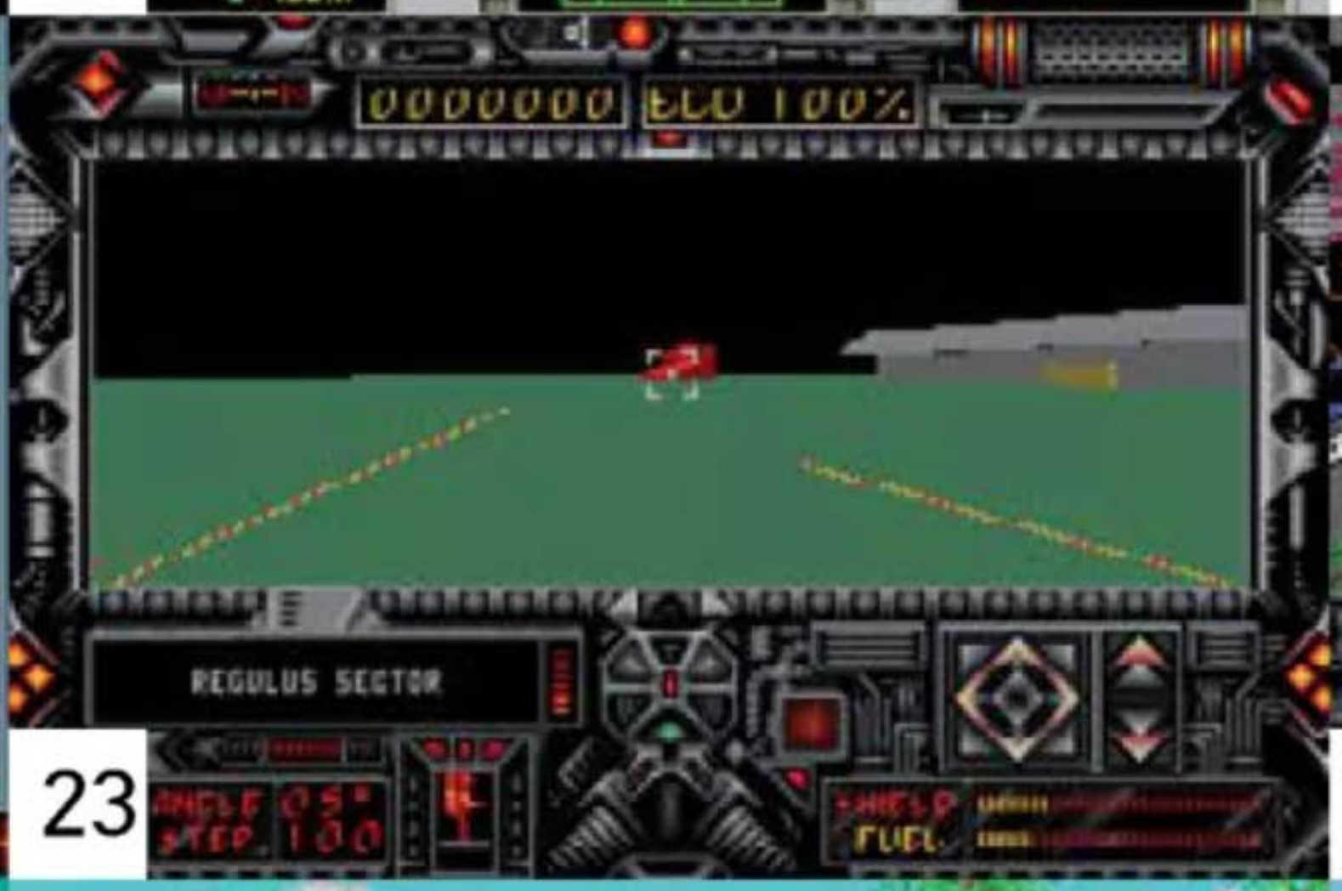
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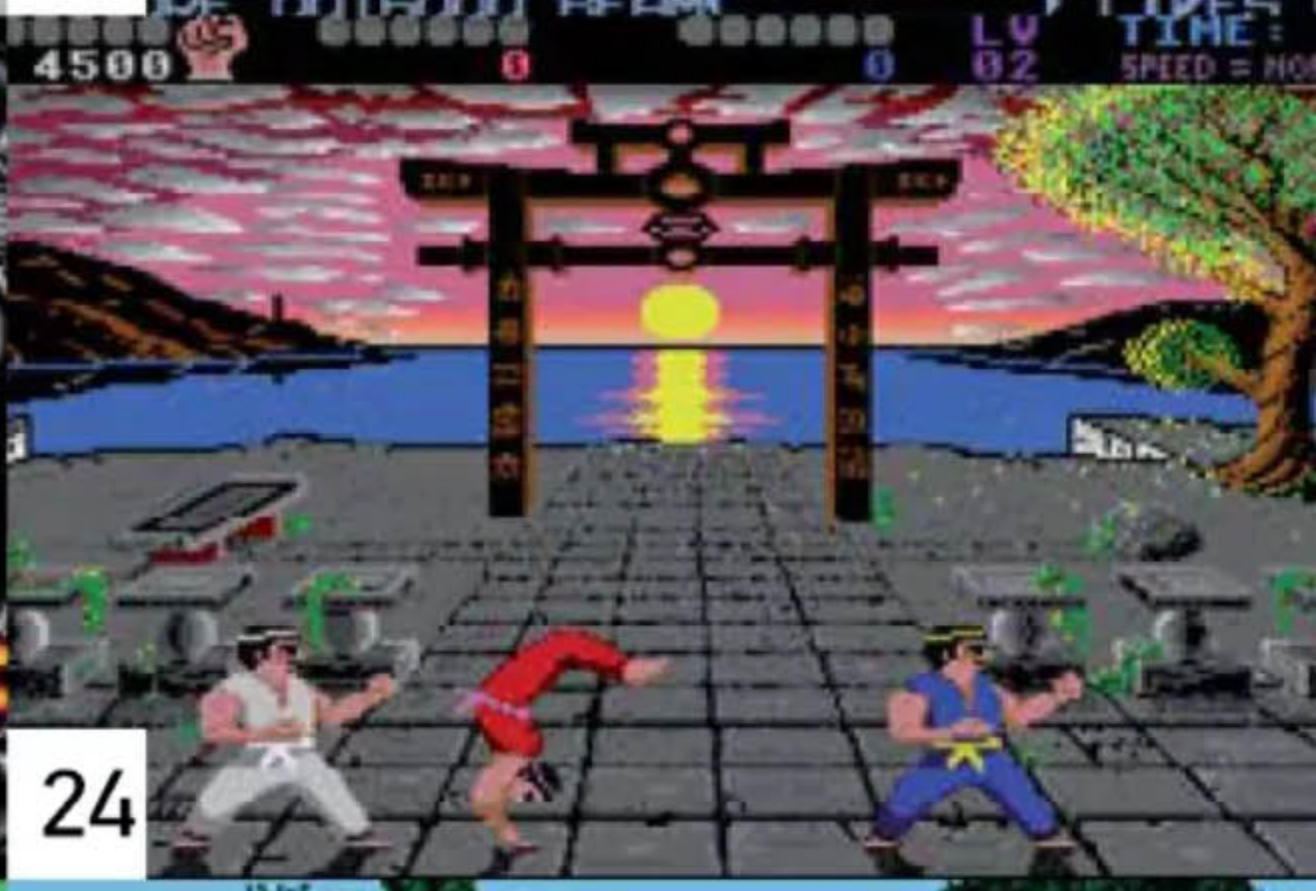
REGULUS SECTOR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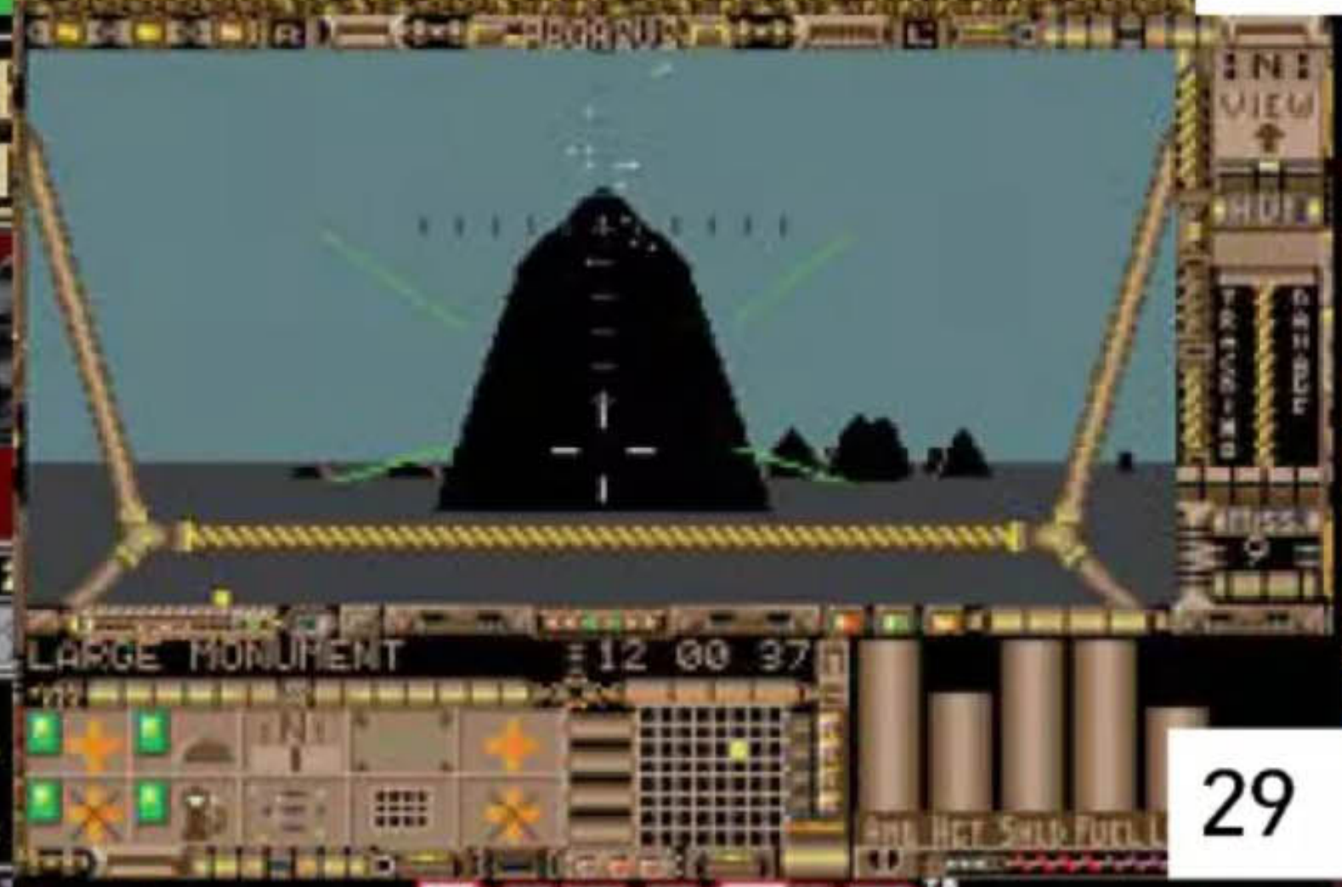
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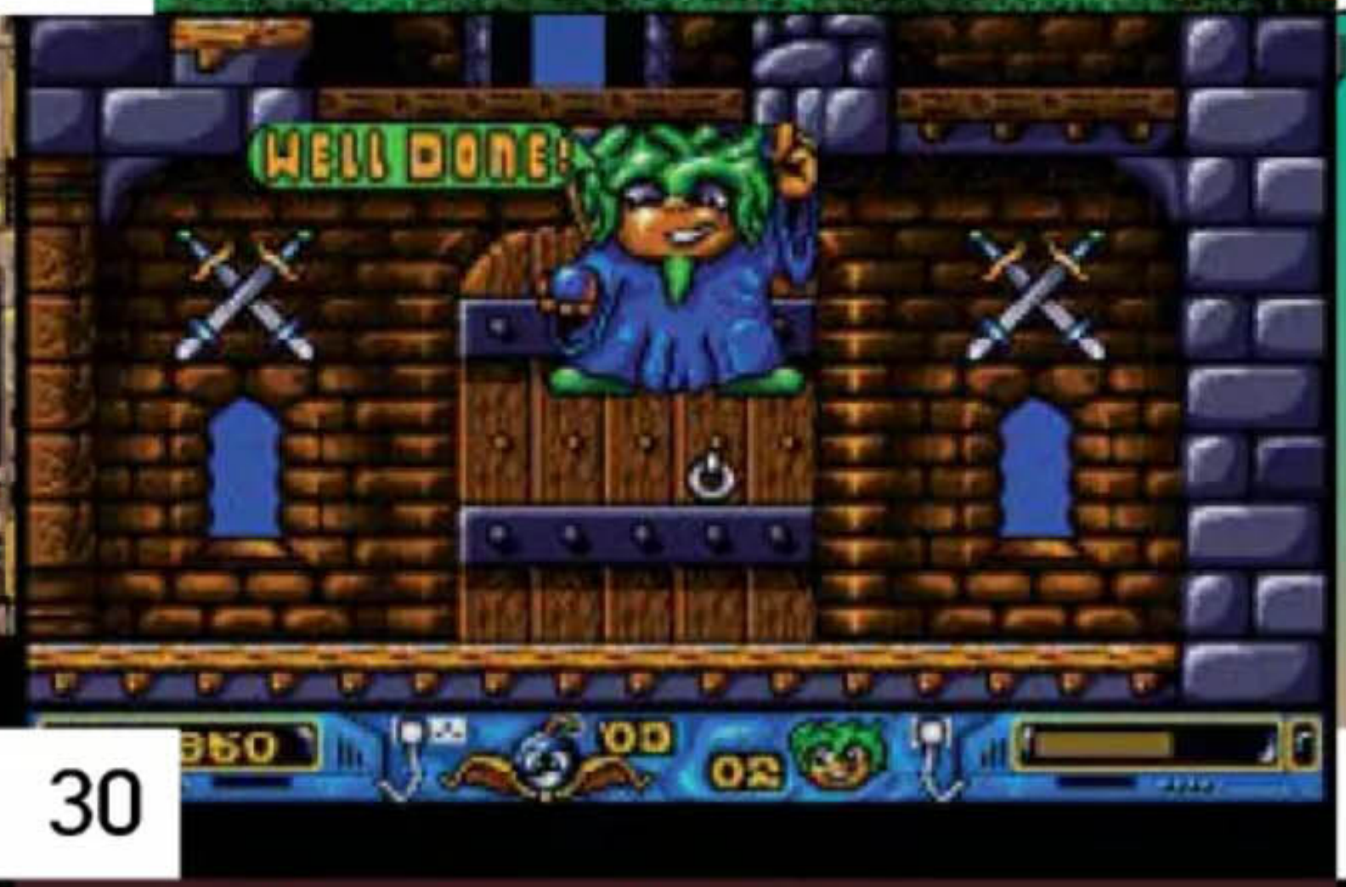
LARGE MONUMENT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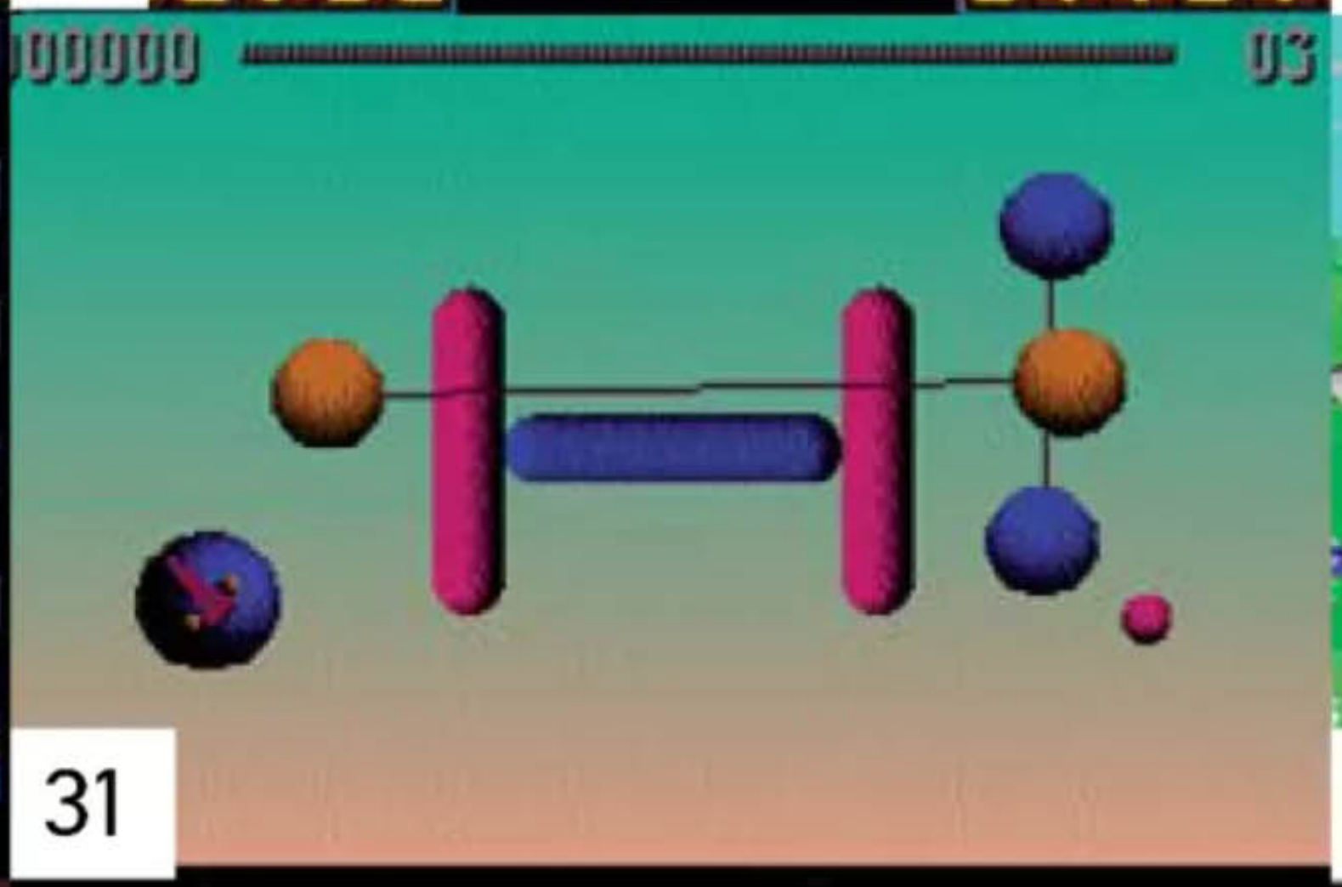
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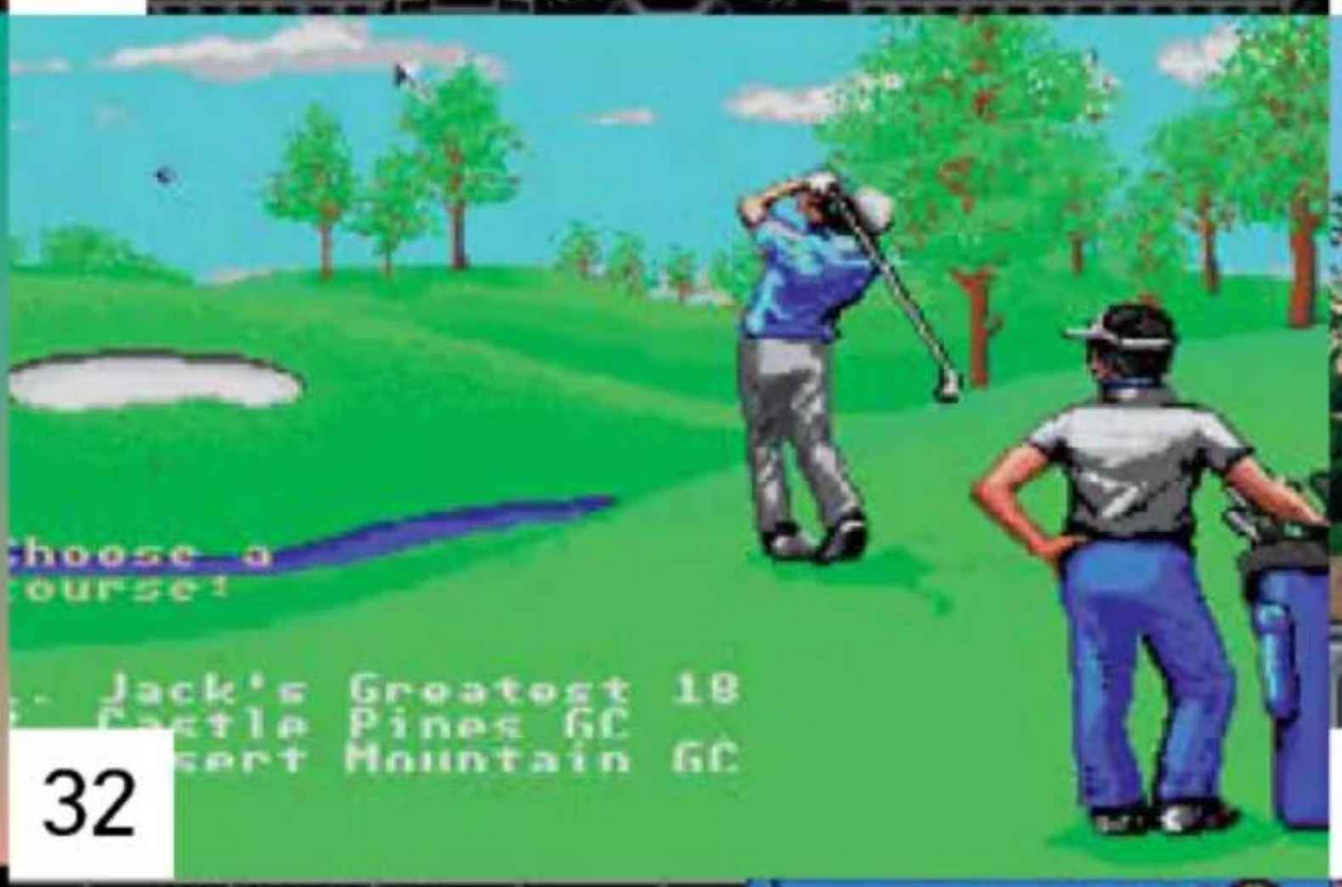
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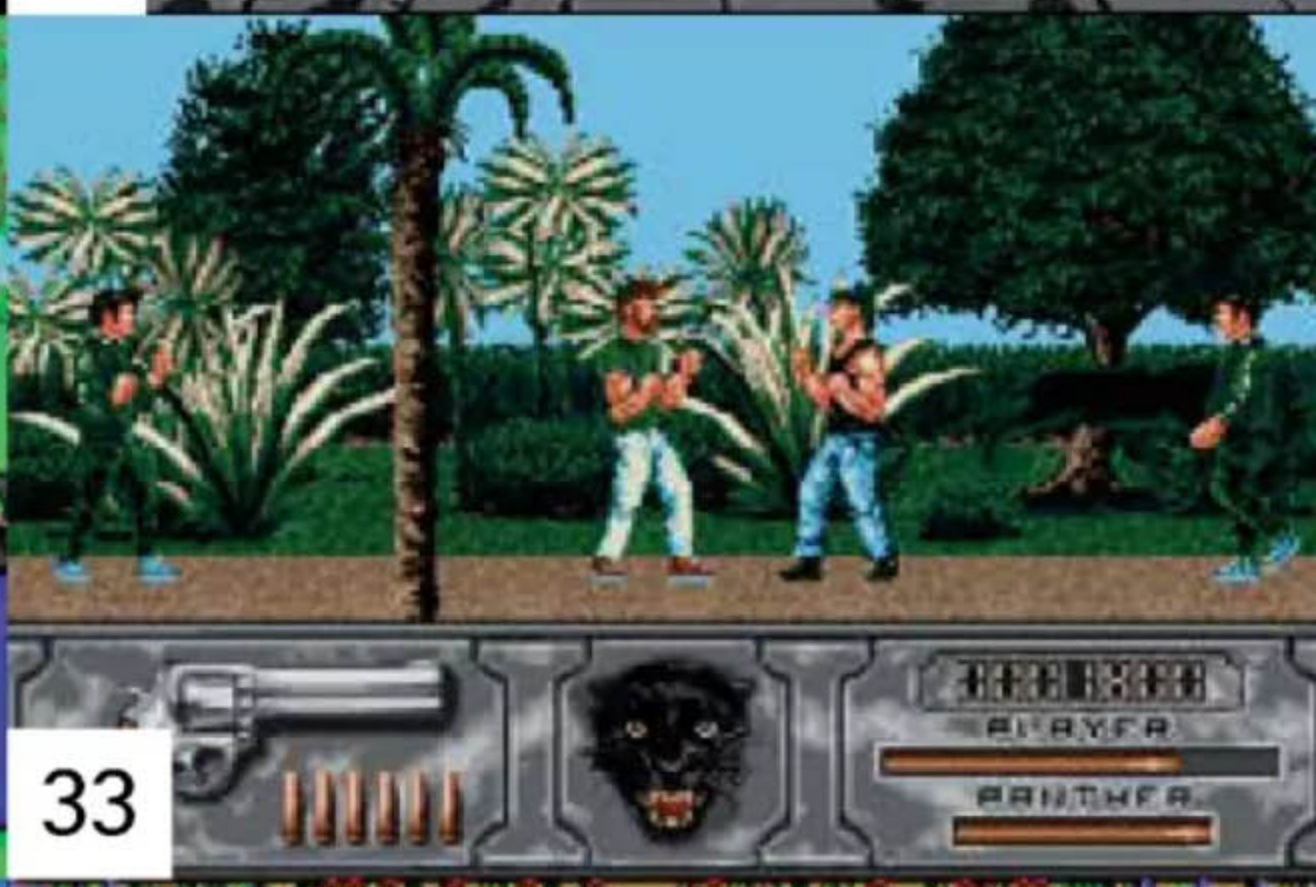
Choose a course:
Jack's Greatest 18
Castle Pines GC
Desert Mountain GC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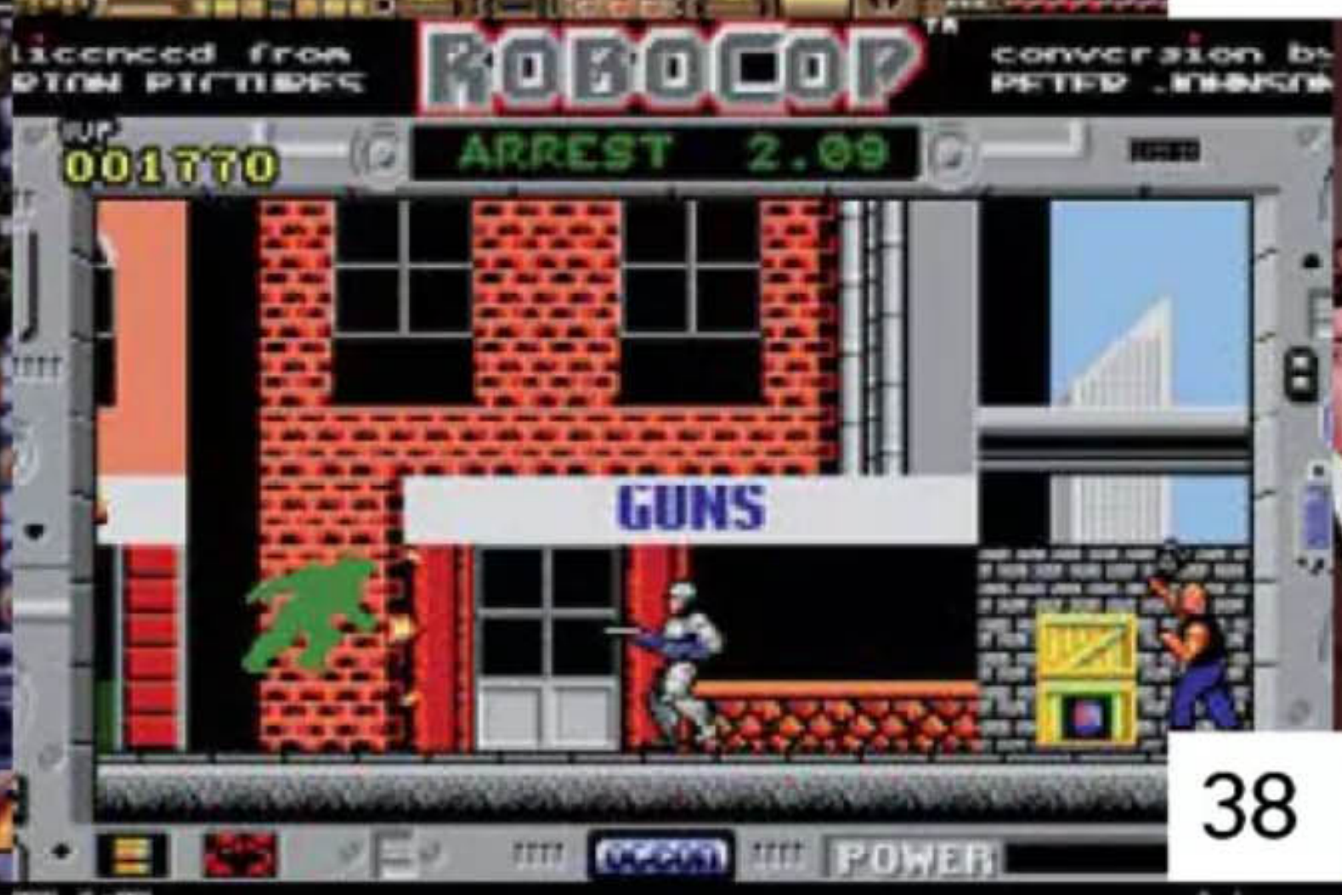
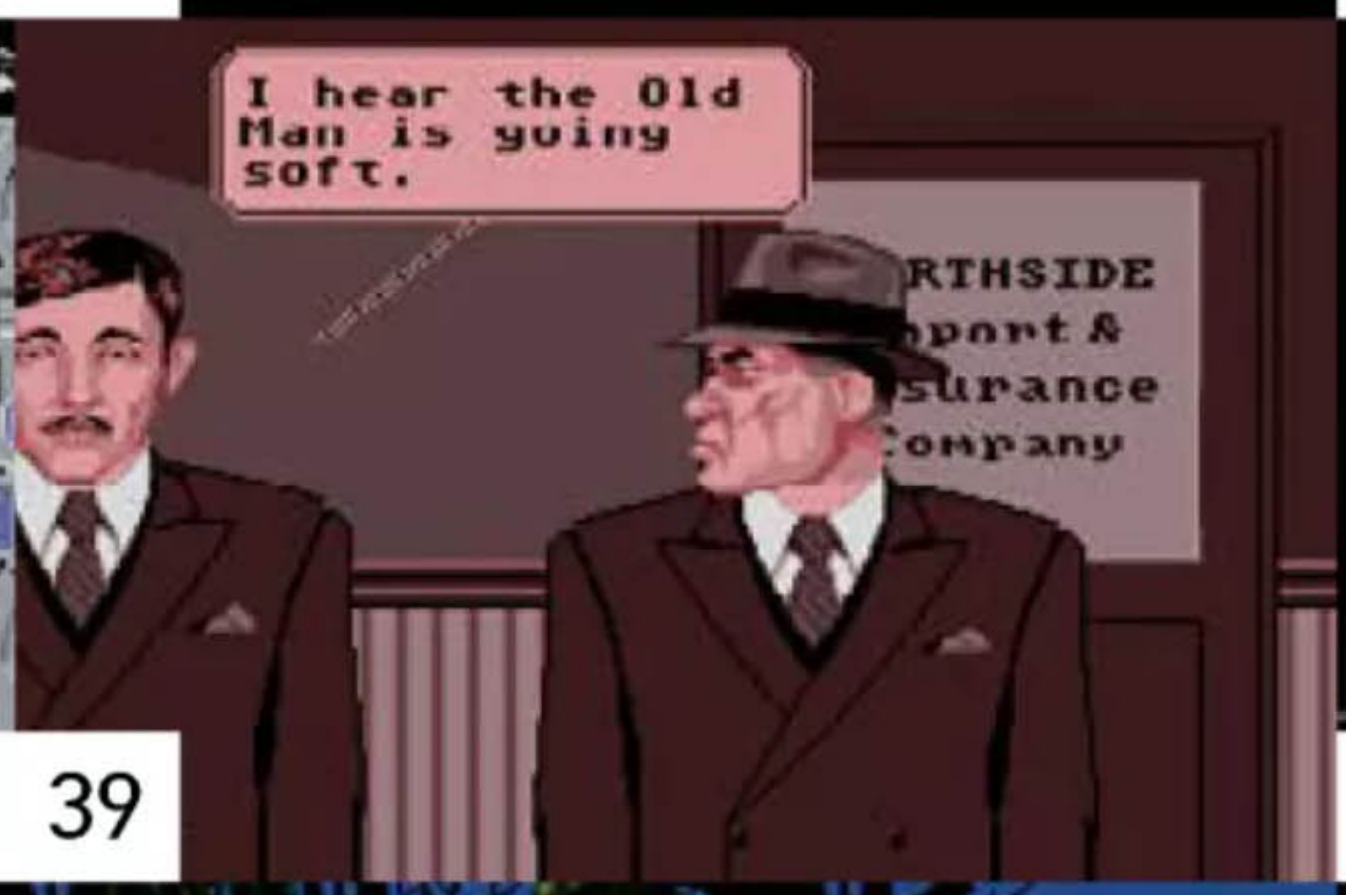

38
Licenced from
ROBOCOP
conversion by
ARREST 2.09
GUNS
POWER


39
I hear the Old Man is going soft.
RTHSIDE
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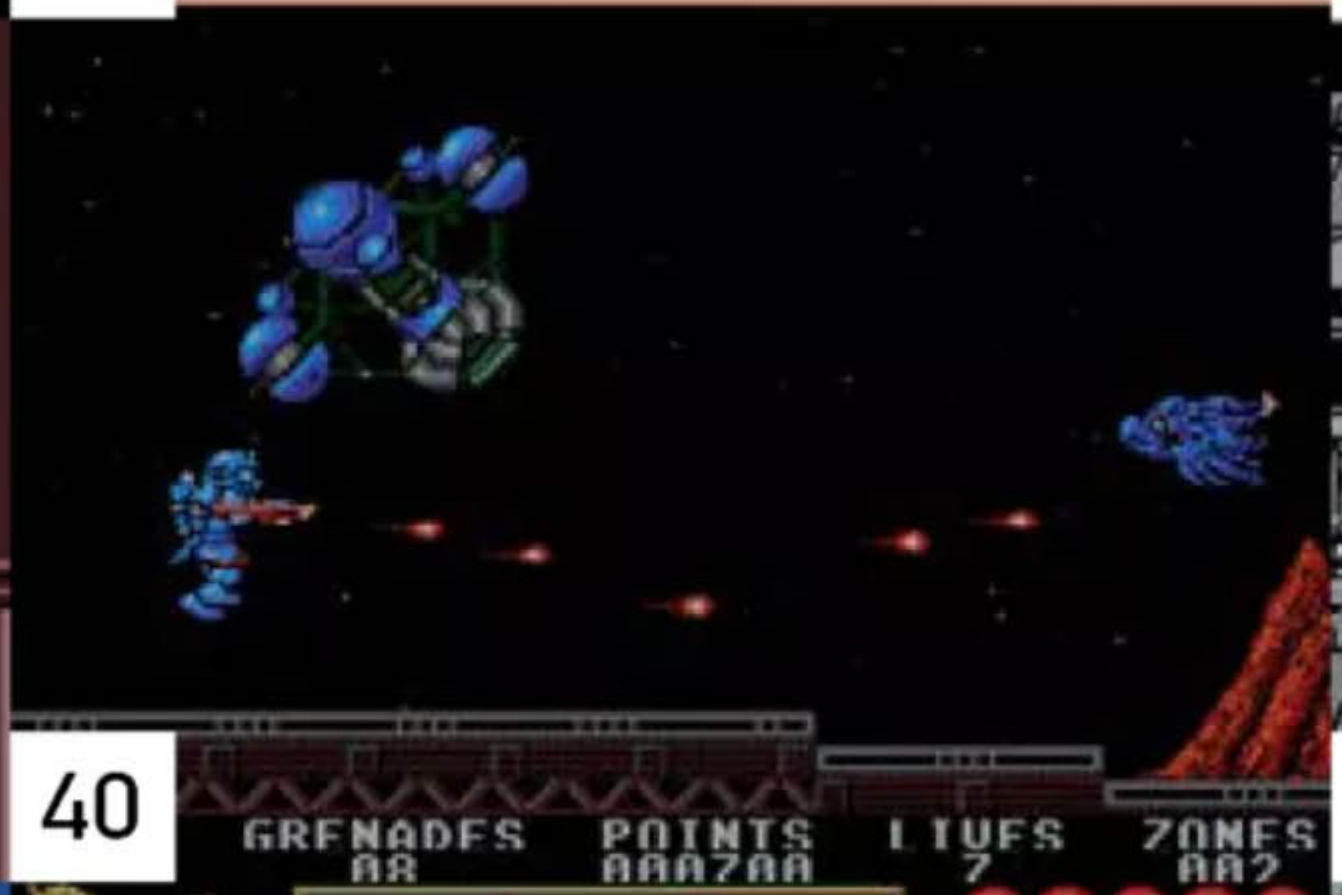
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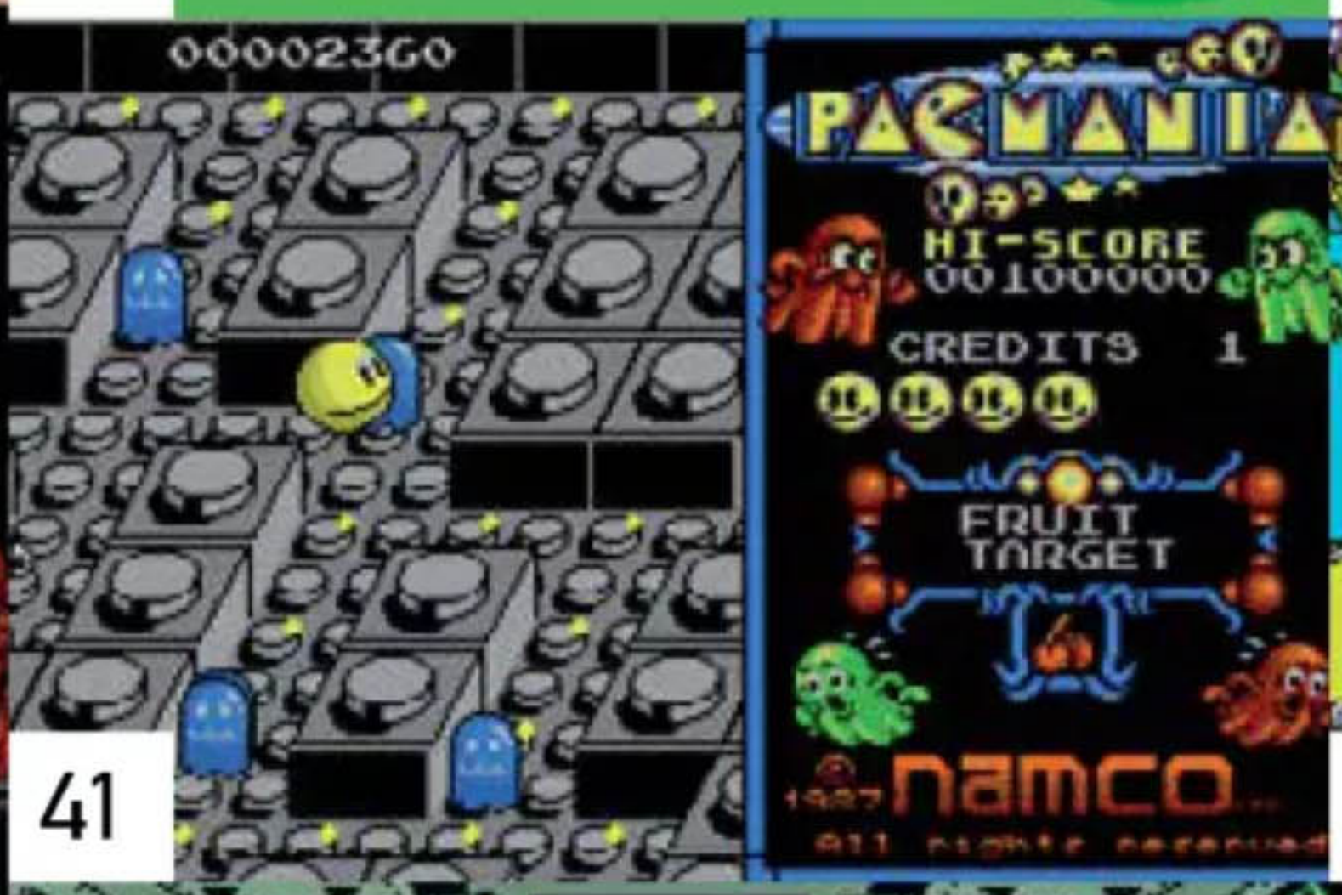
GRENADES
POINTS
LIVES
ZONES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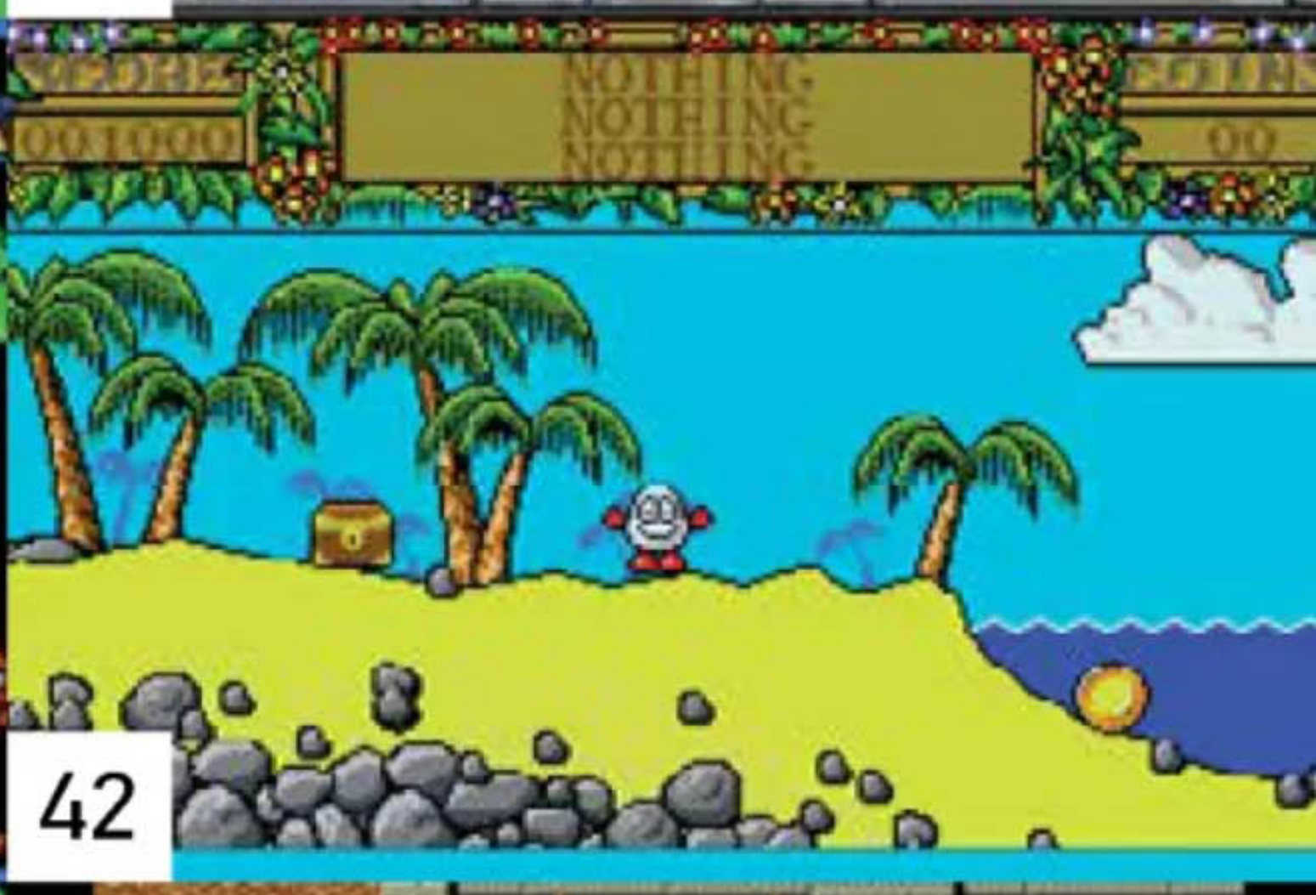
PAC-MANIA
HI-SCORE
00100000
CREDITS 1
FRUIT TARGET
namco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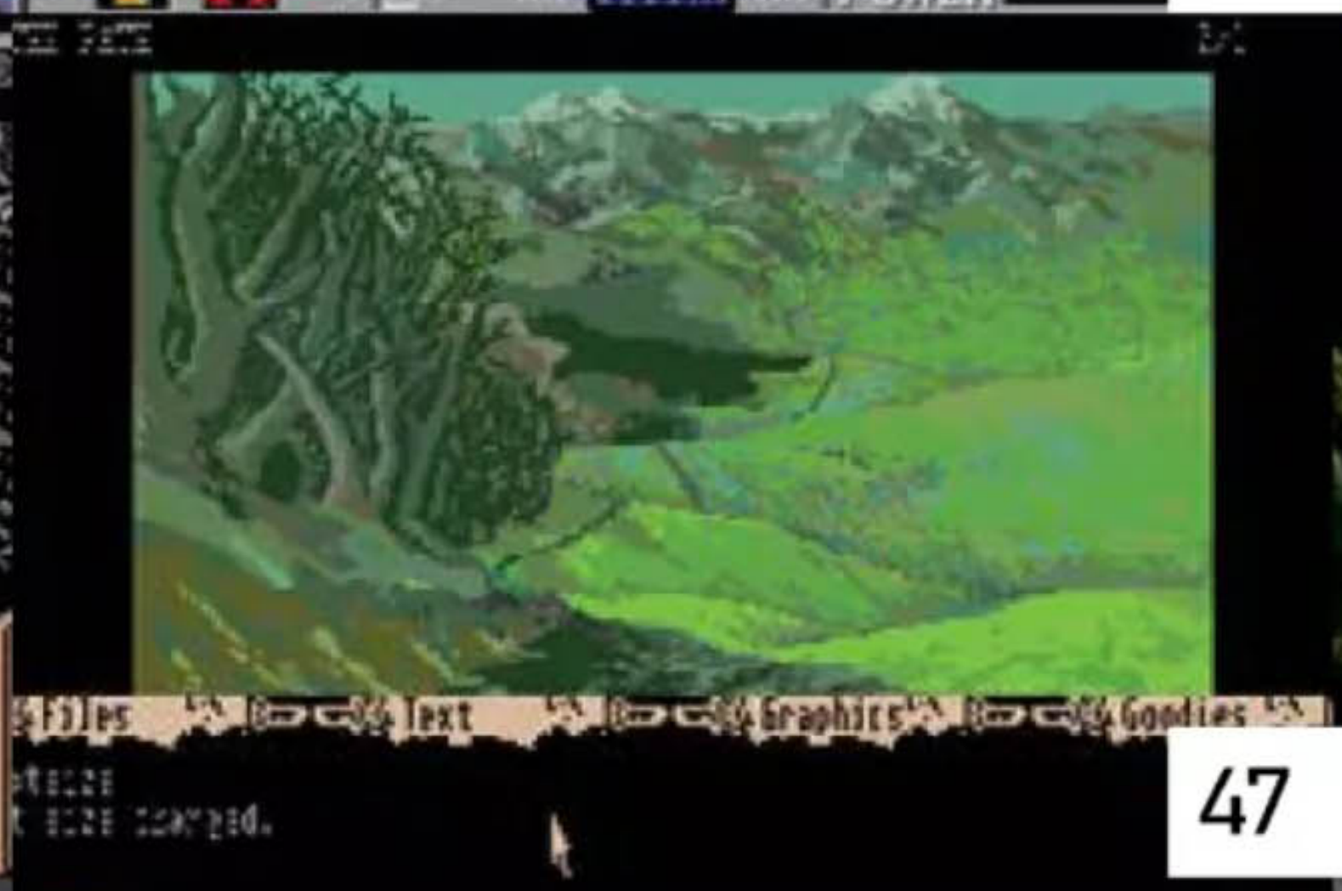
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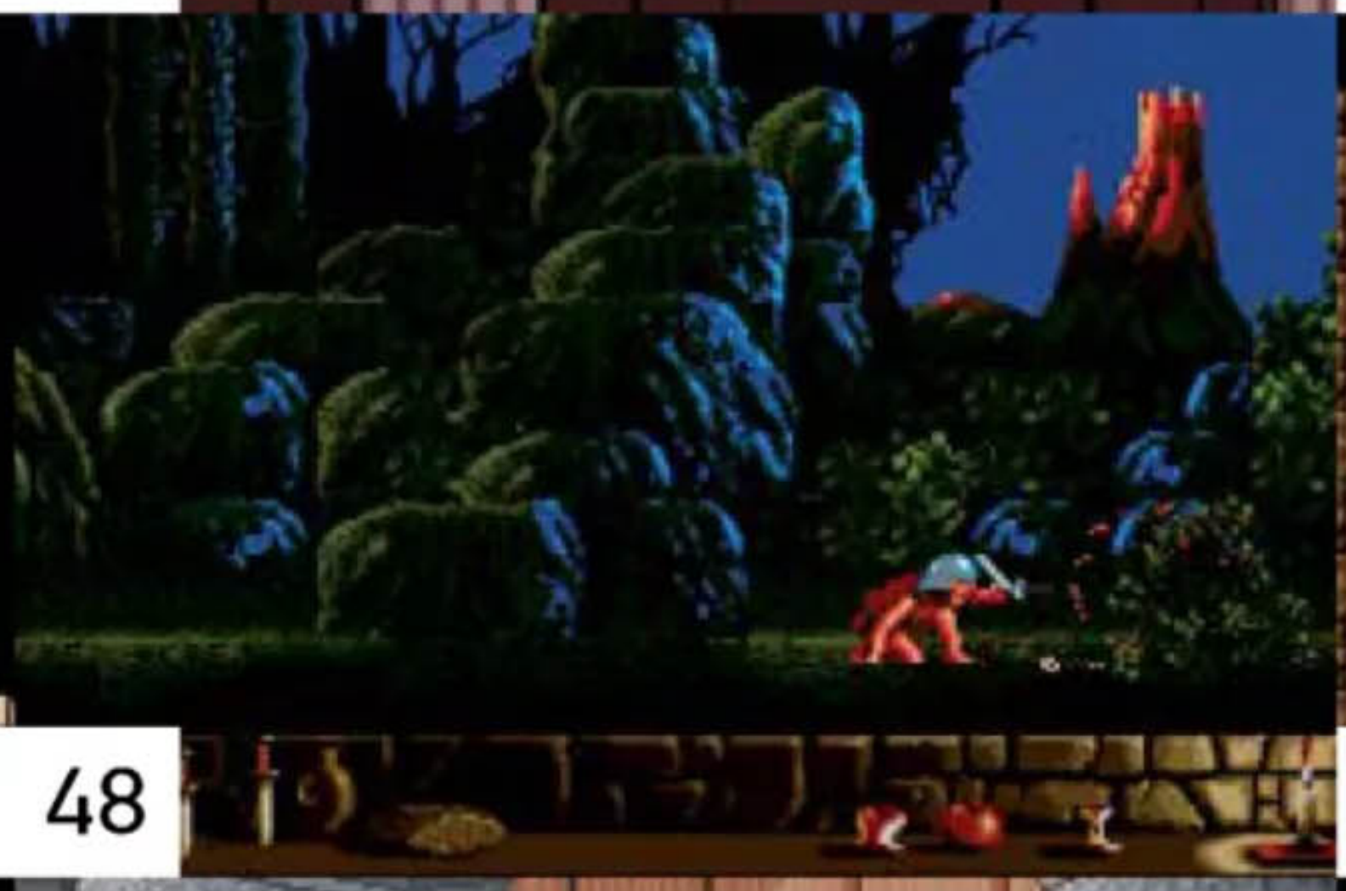
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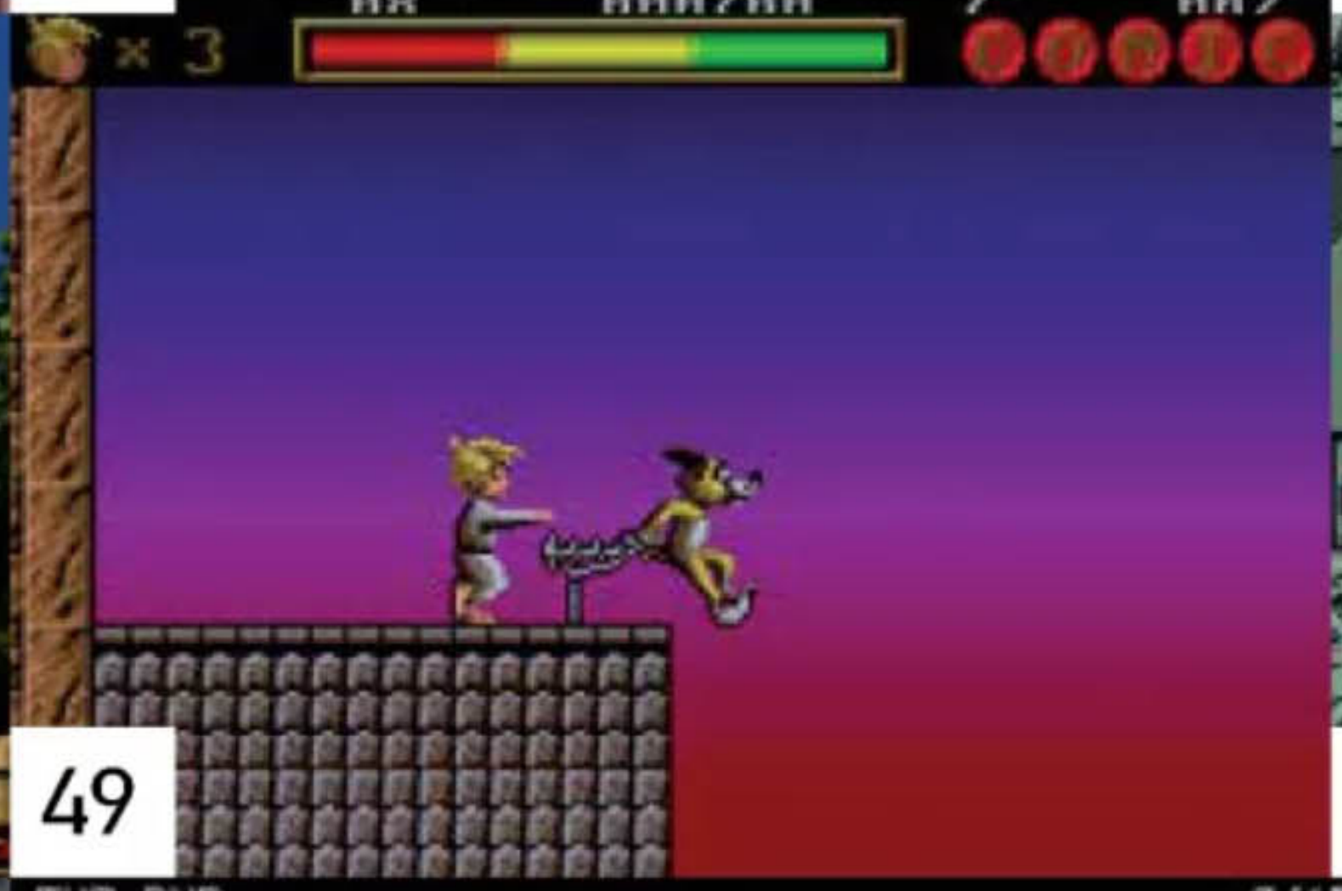
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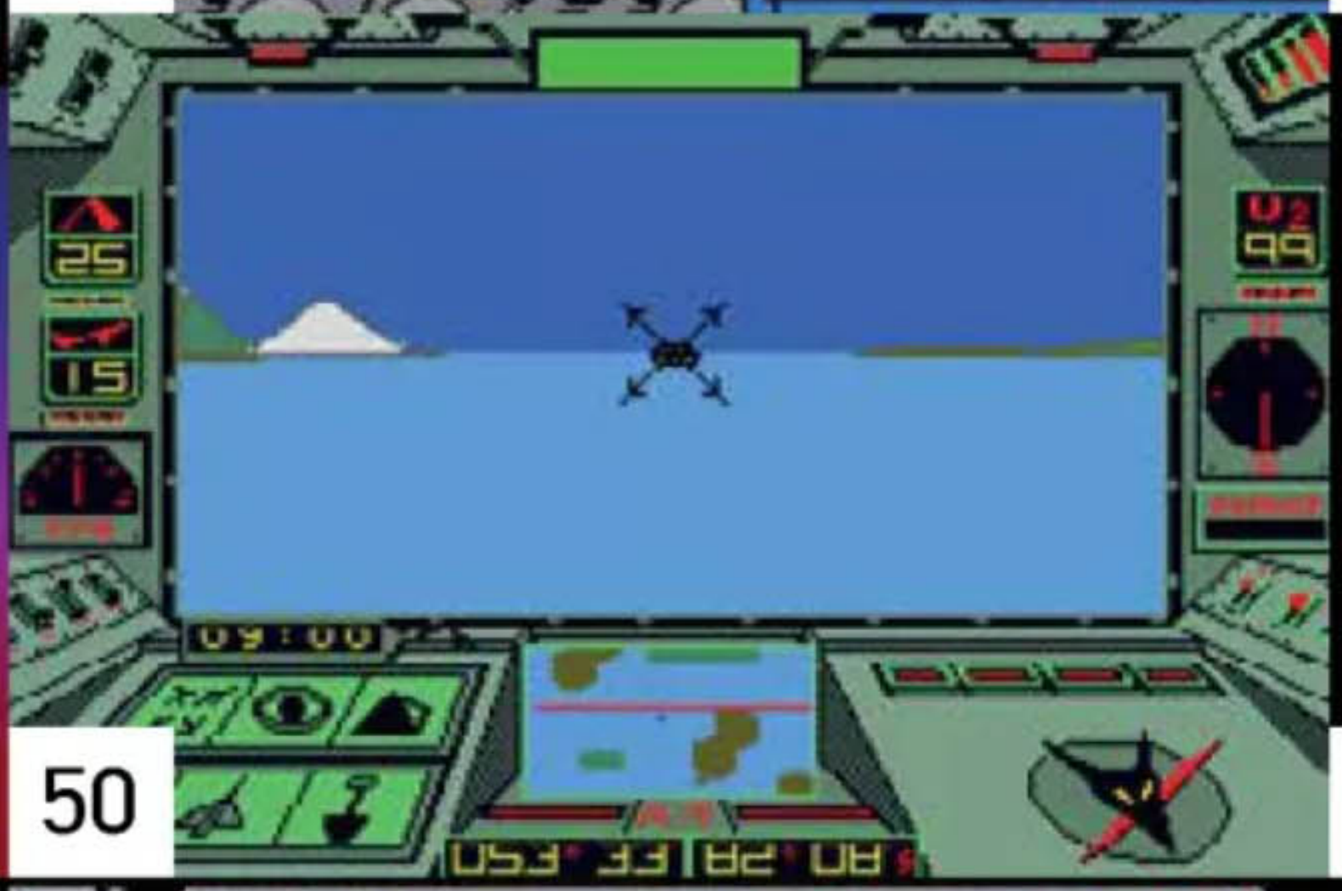
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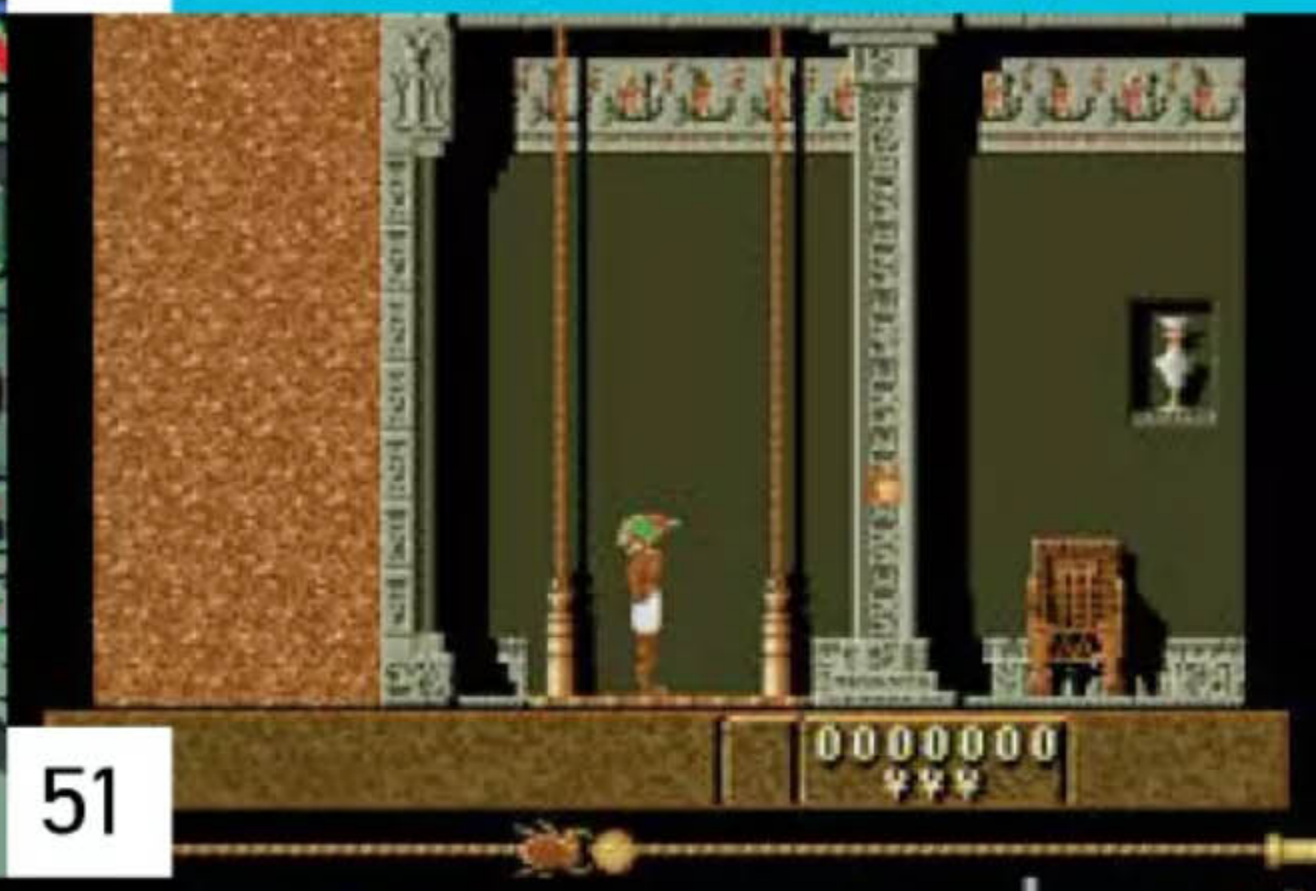
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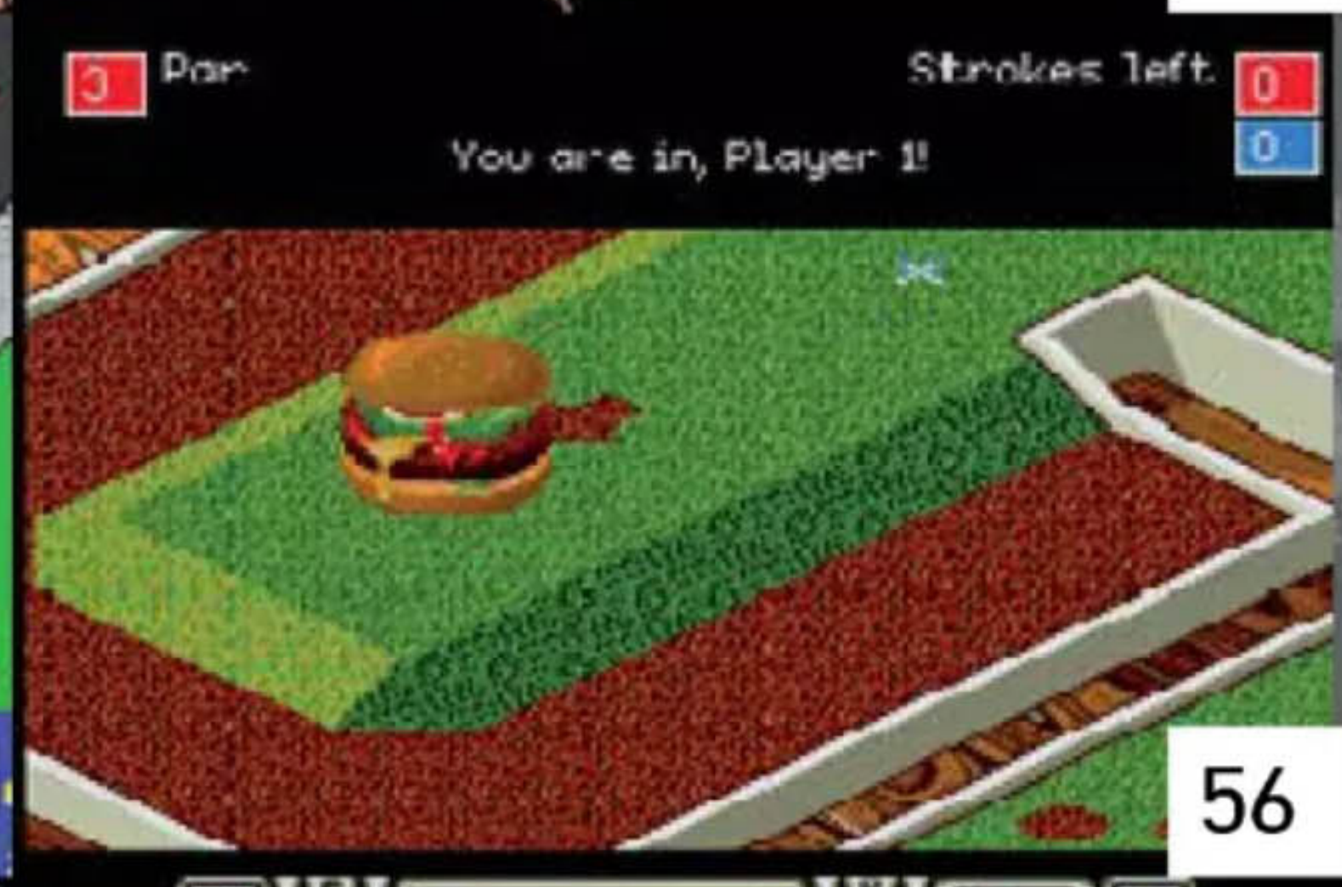
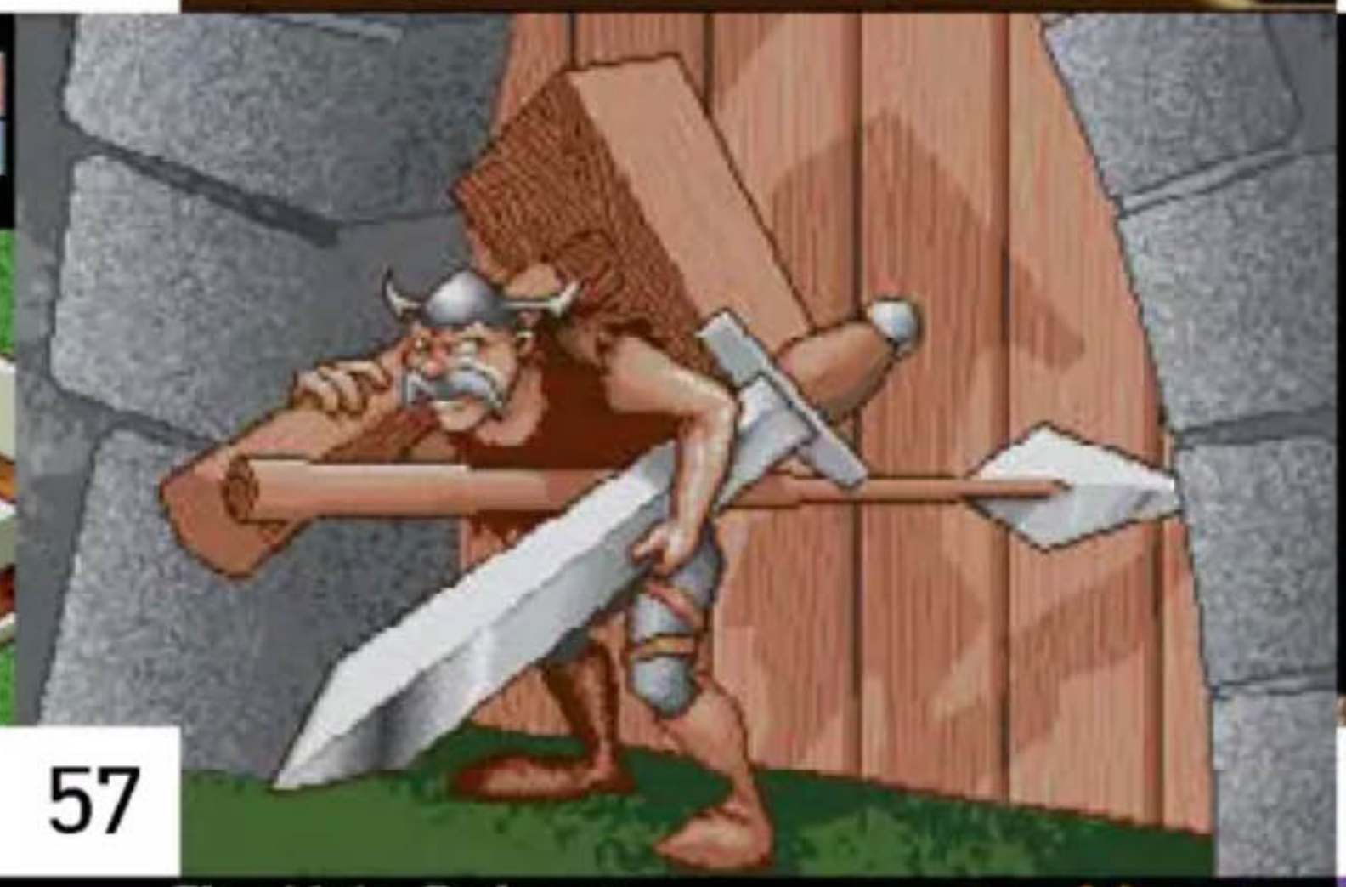

56
Par
Strokes left
You are in, Player 1!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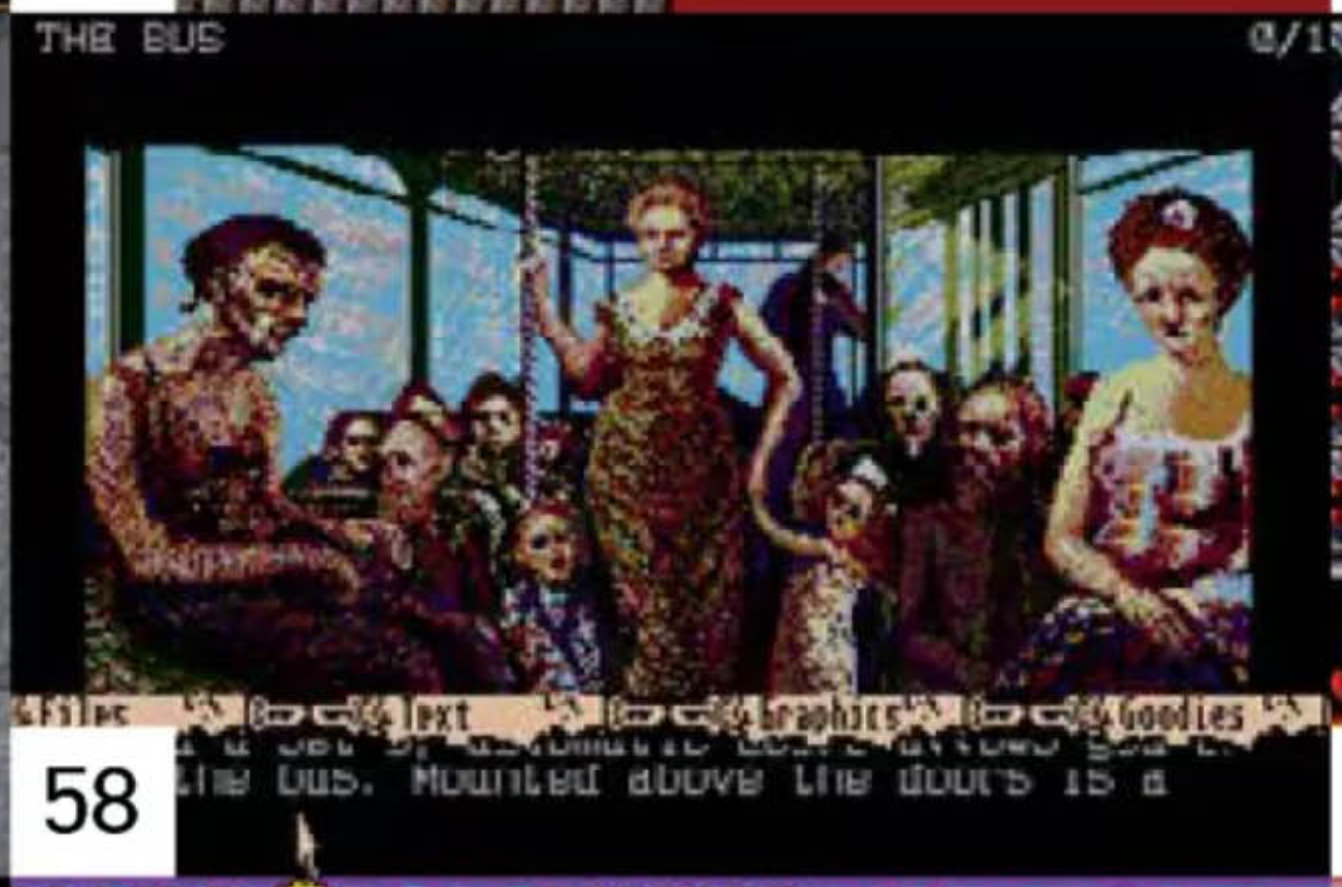
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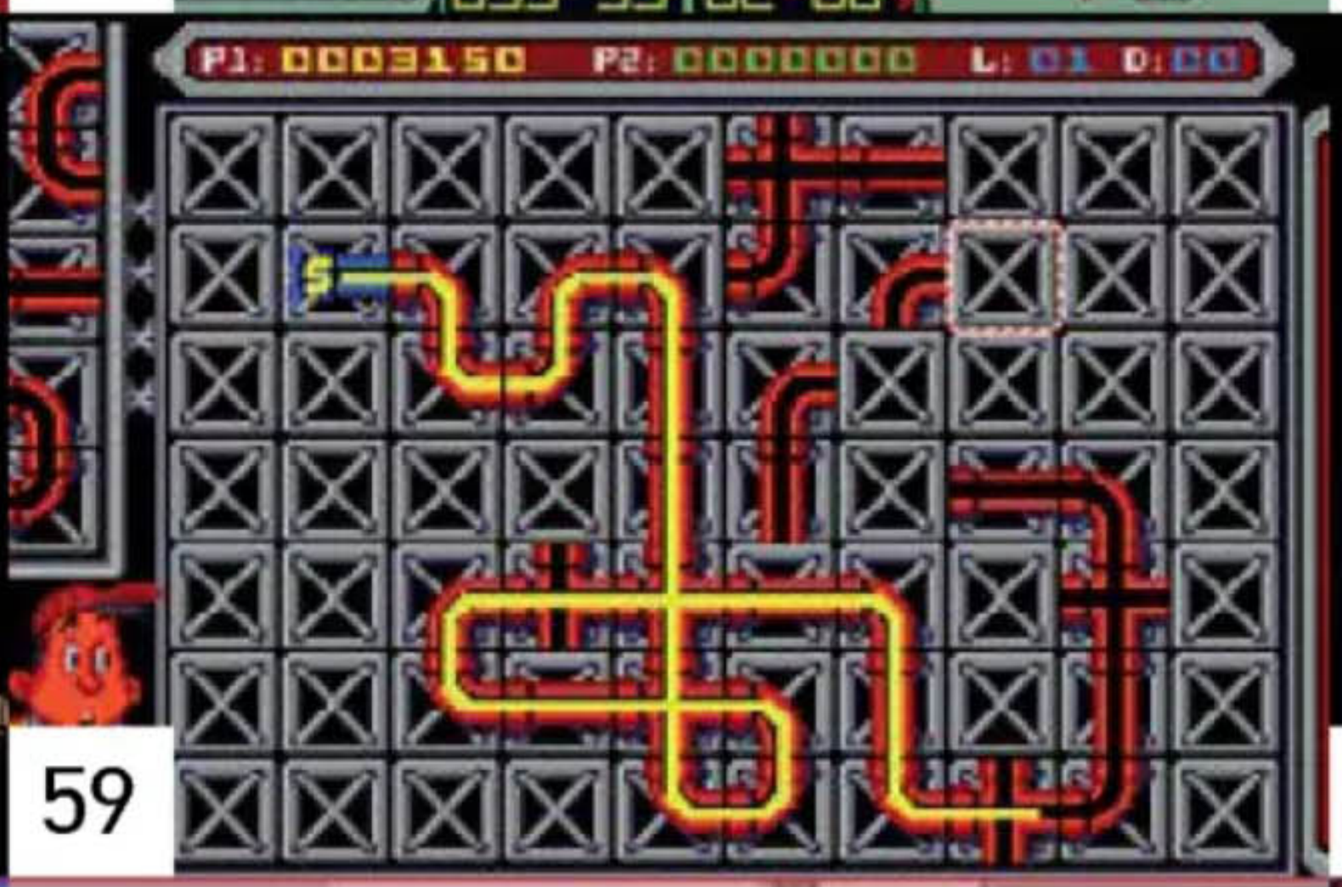
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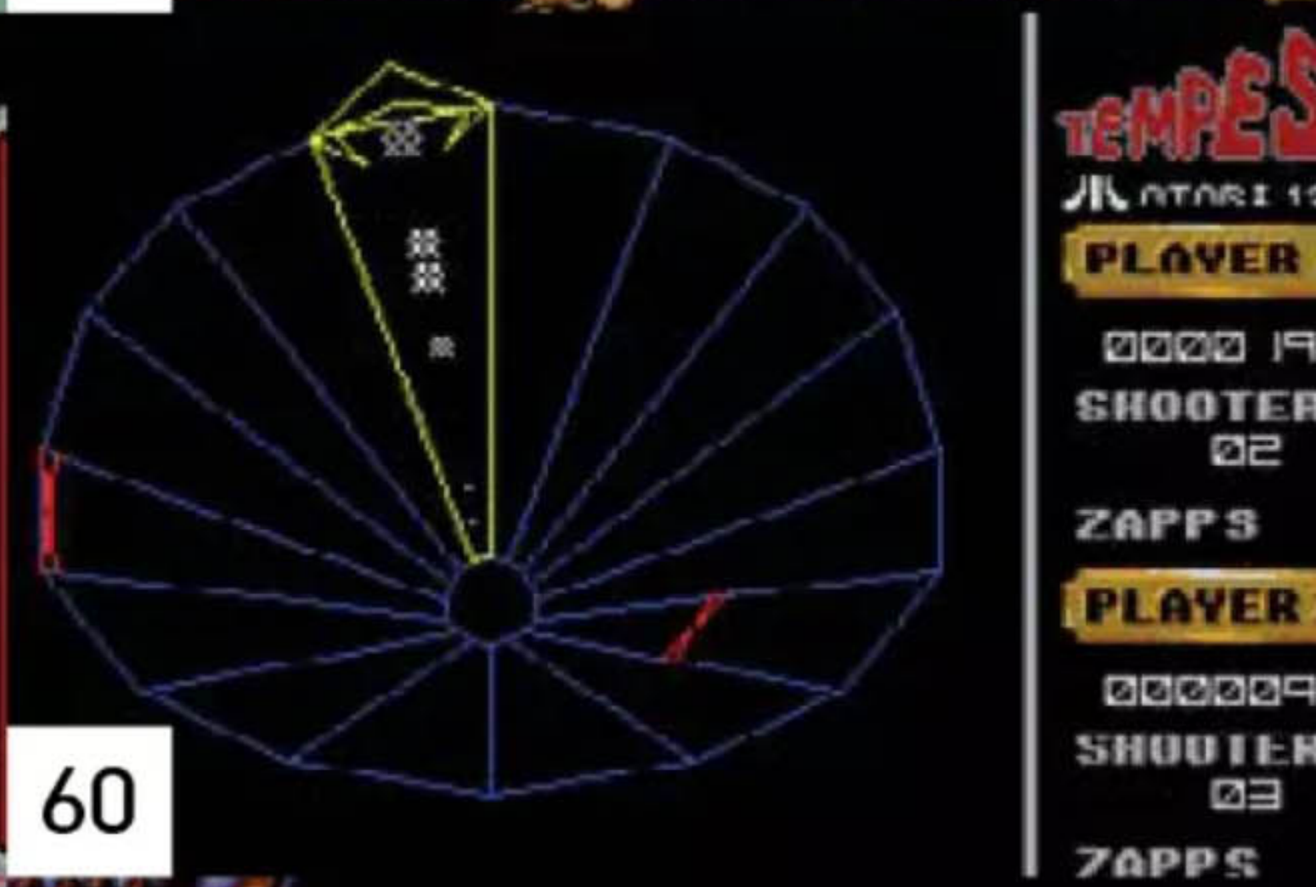
P1: 0003150 P2: 0000000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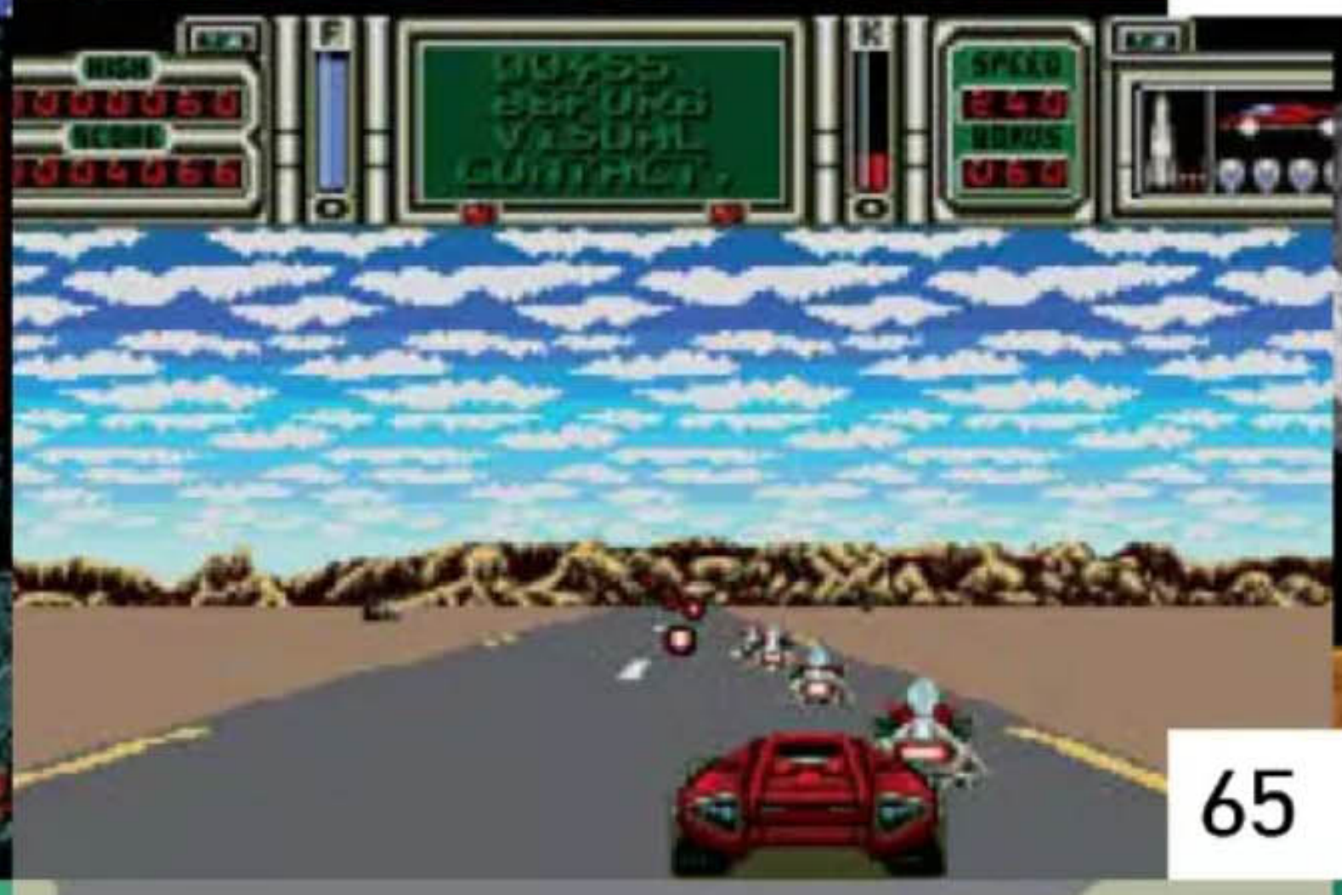
TEMPES
PLAYER
SHOOTER
ZAPPS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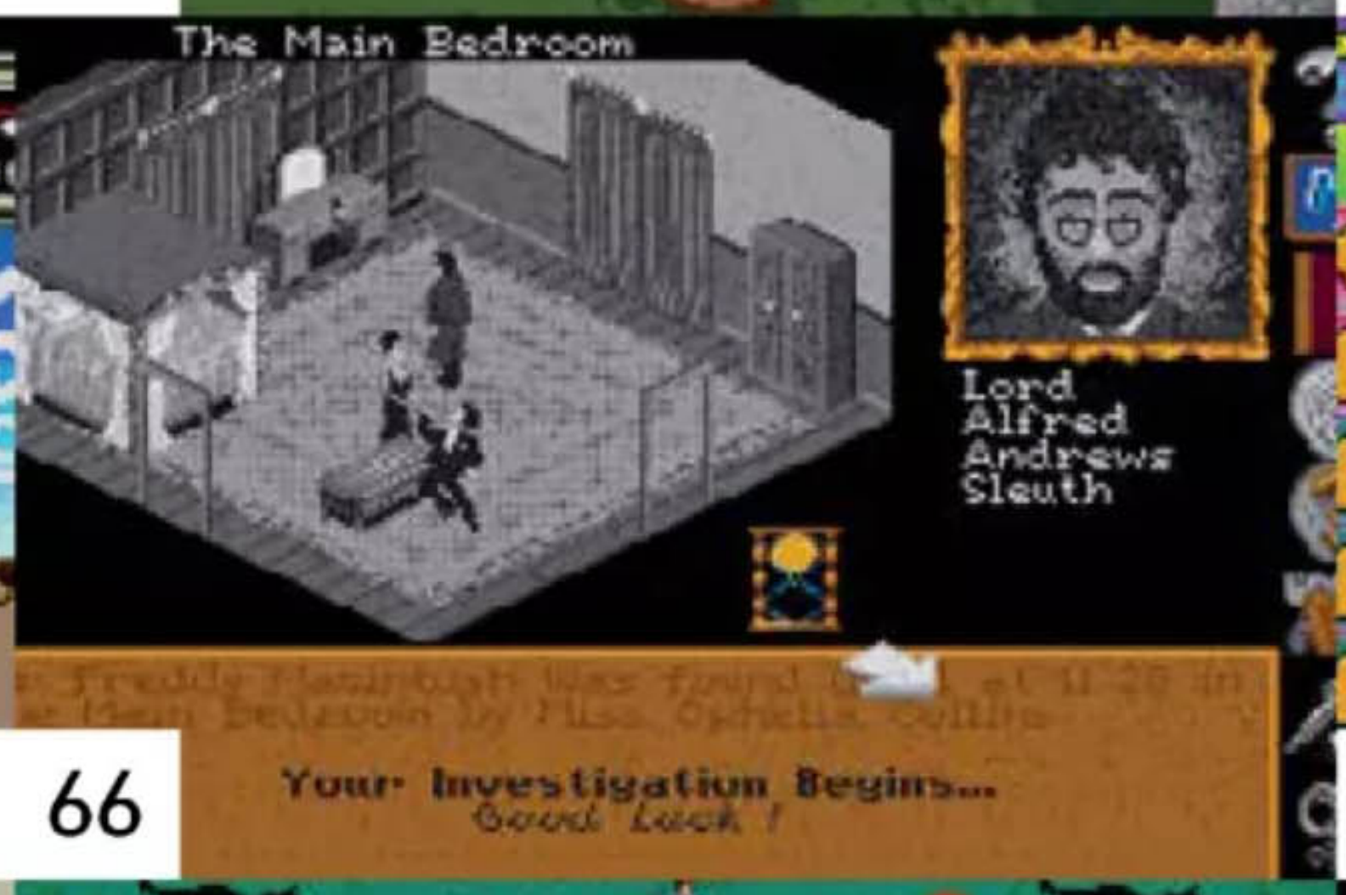
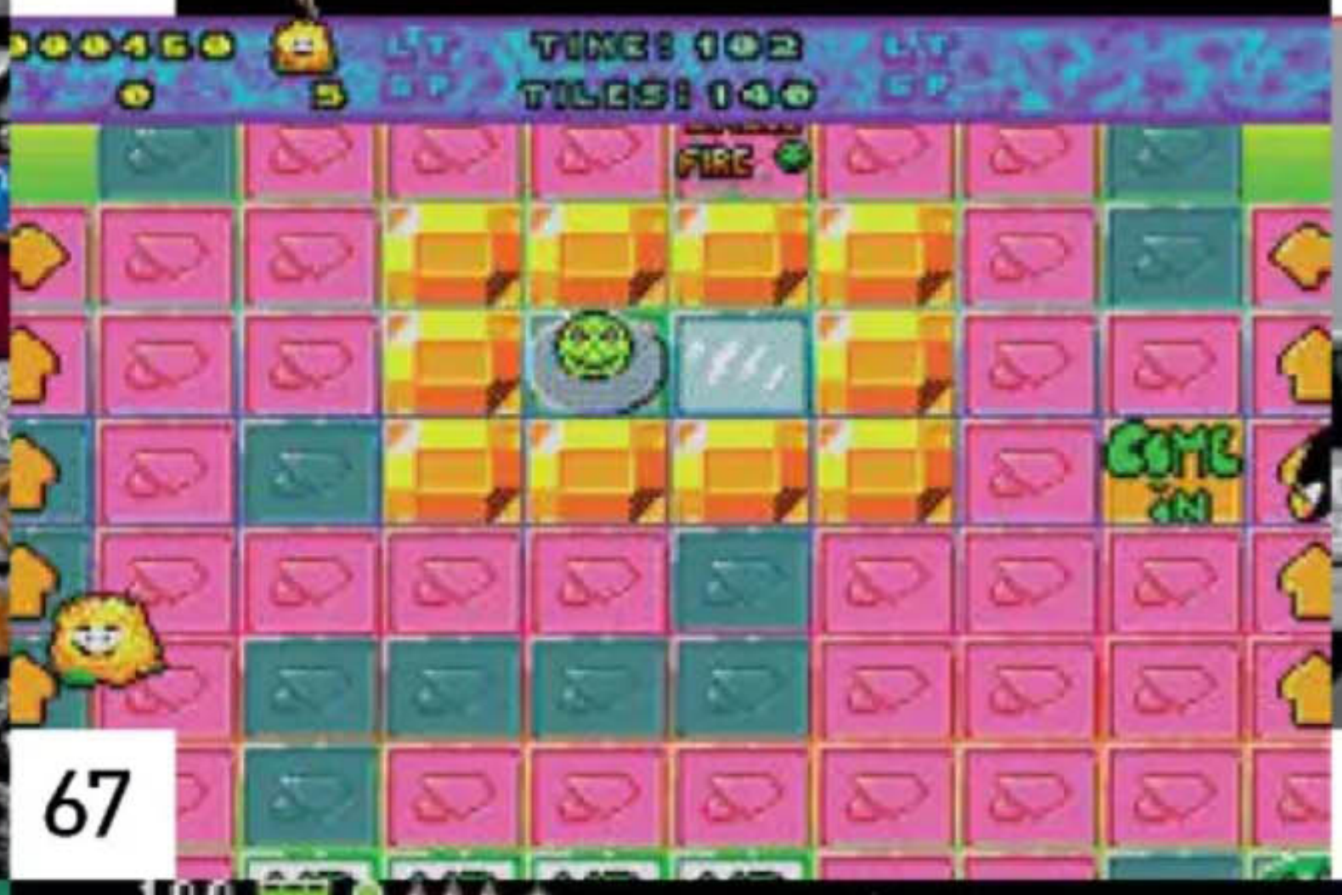

66
The Main Bedroom
Lord Alfred Andrews Sleuth
Your investigation Begins...
Good Luck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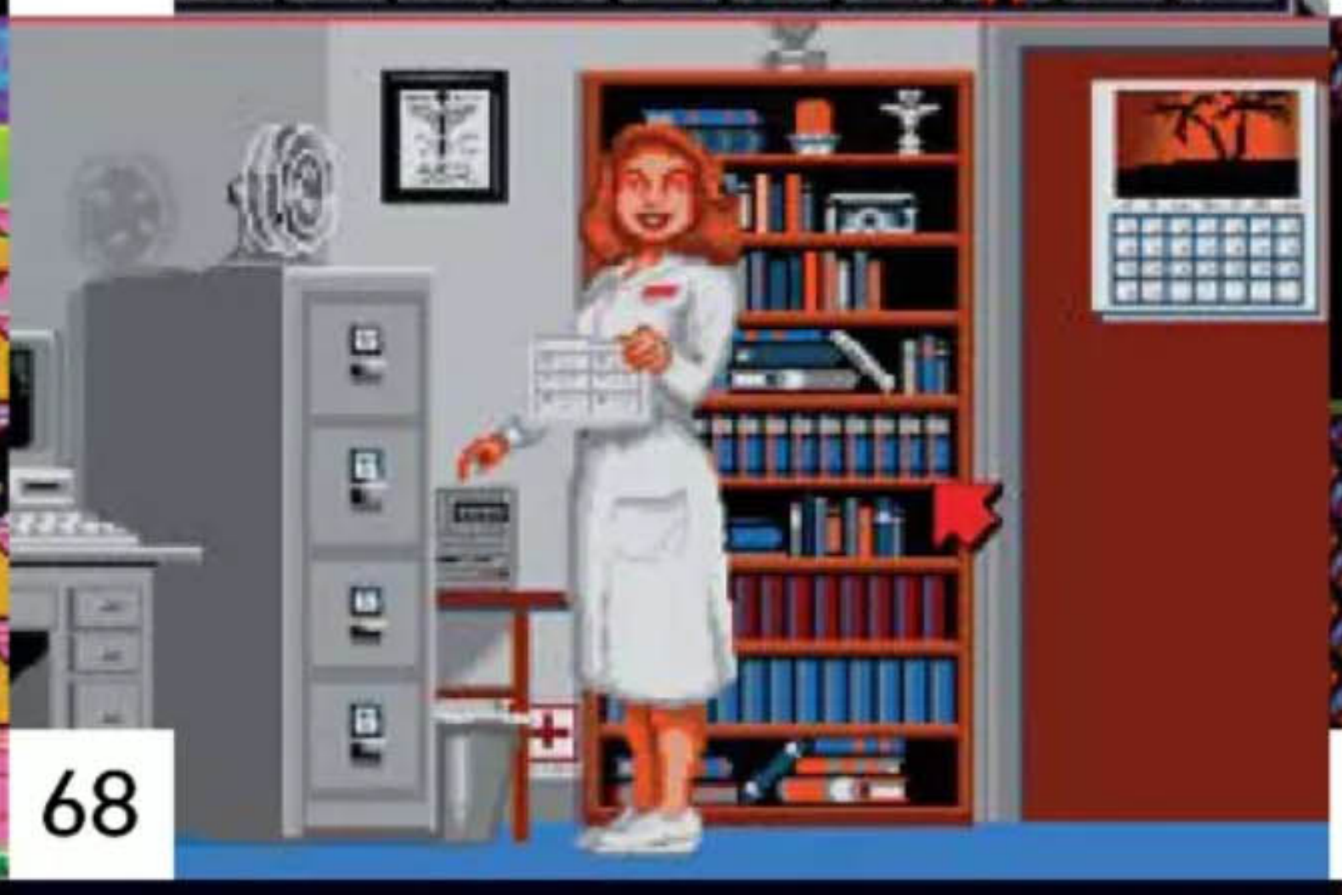
TIME: 103
TILES: 140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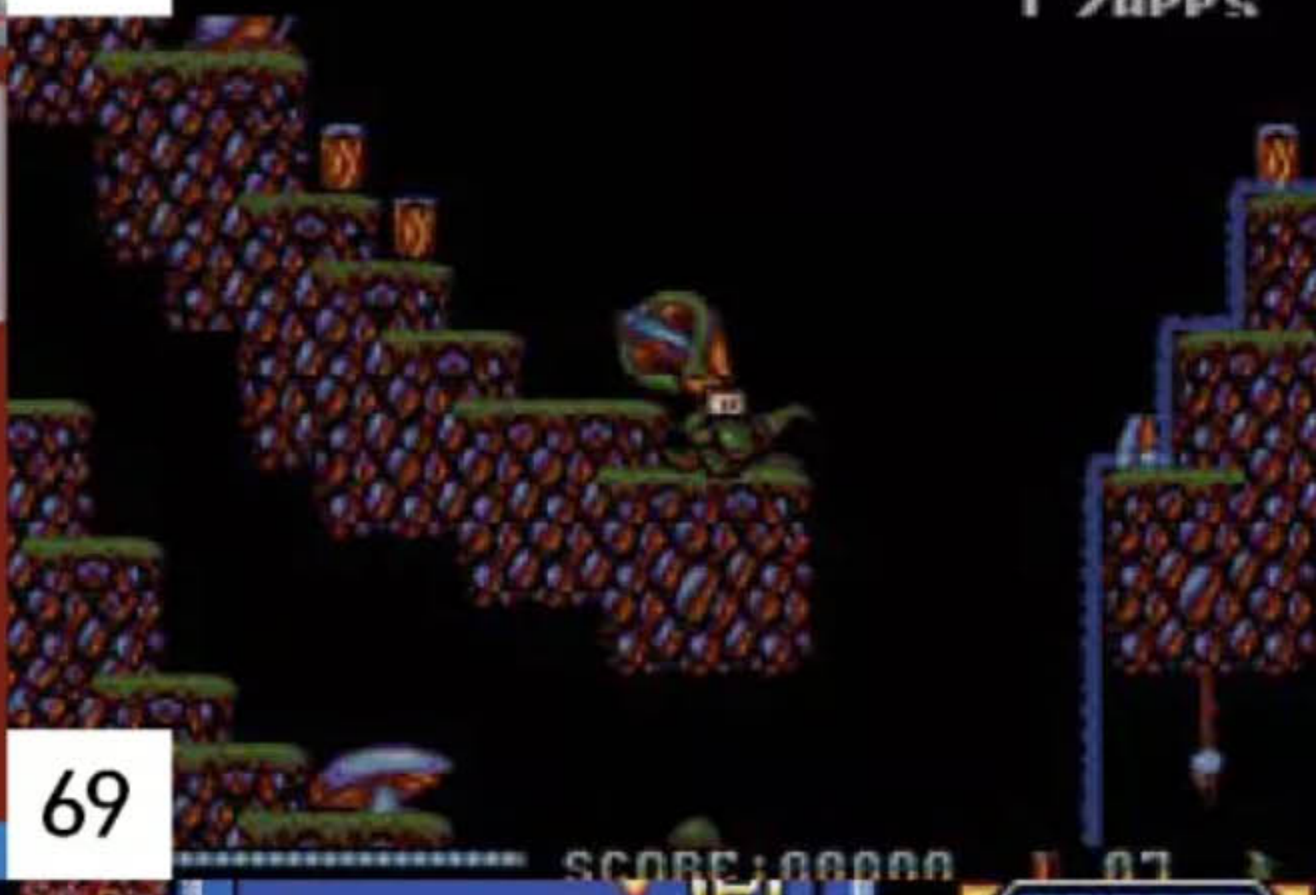
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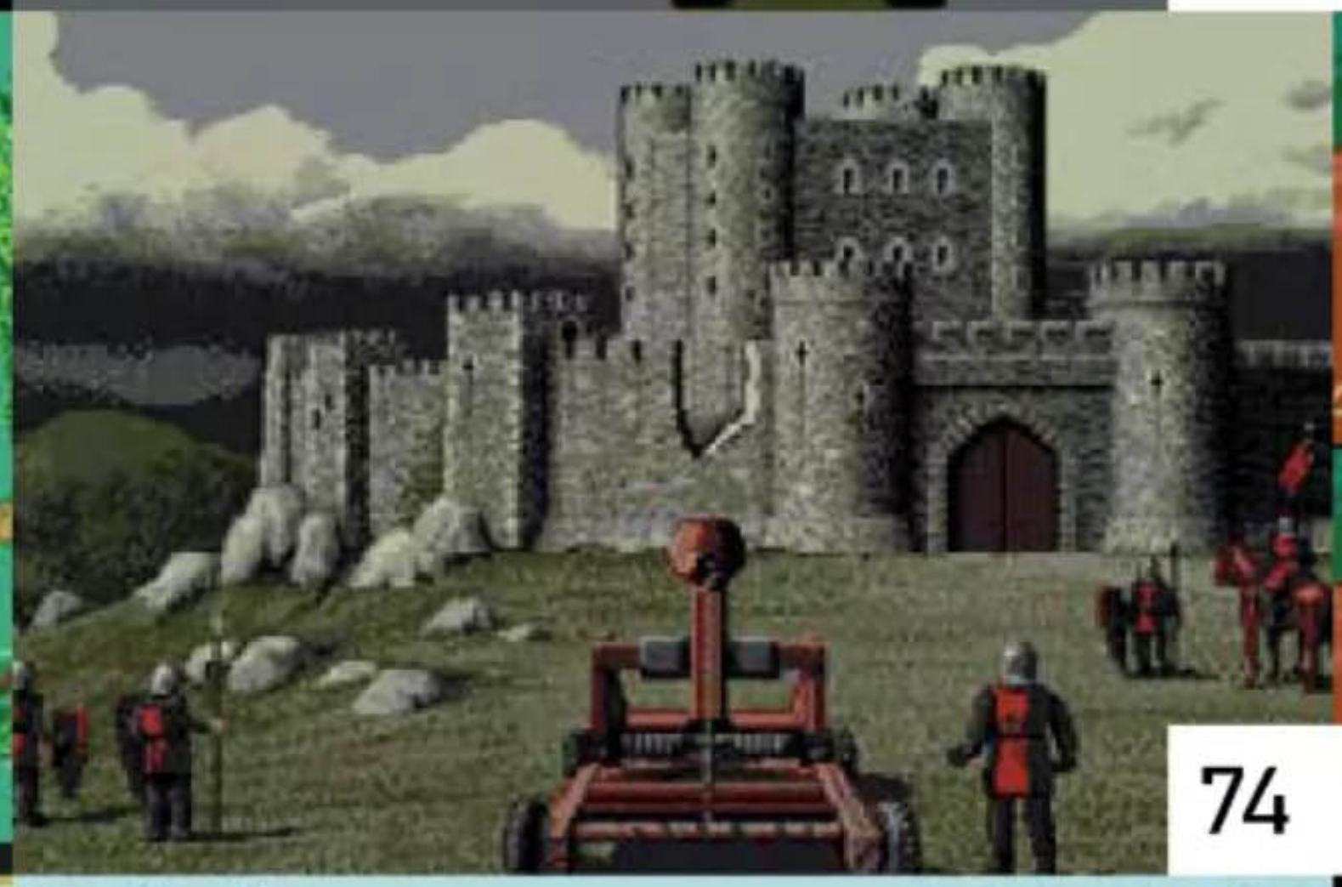
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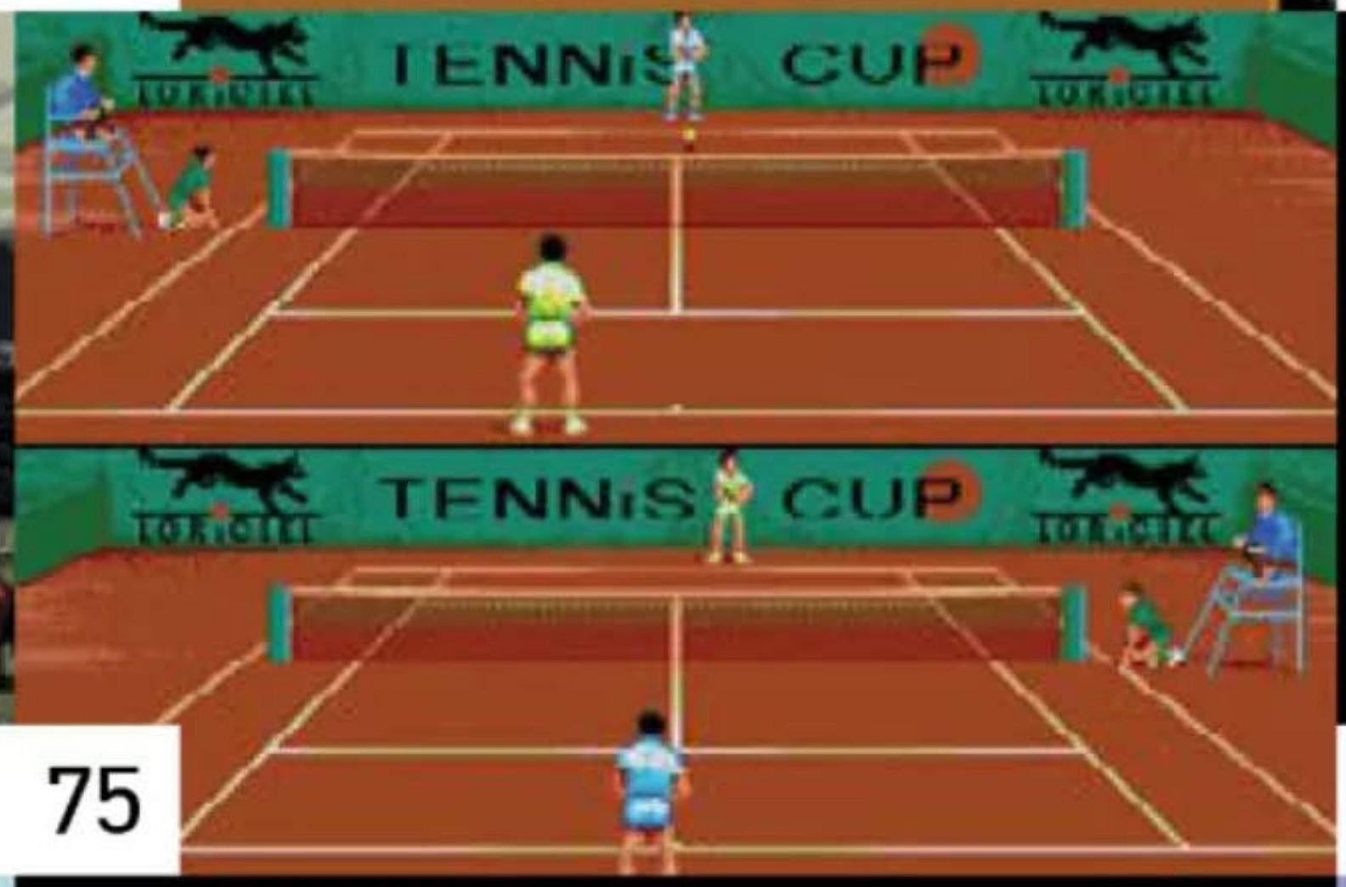
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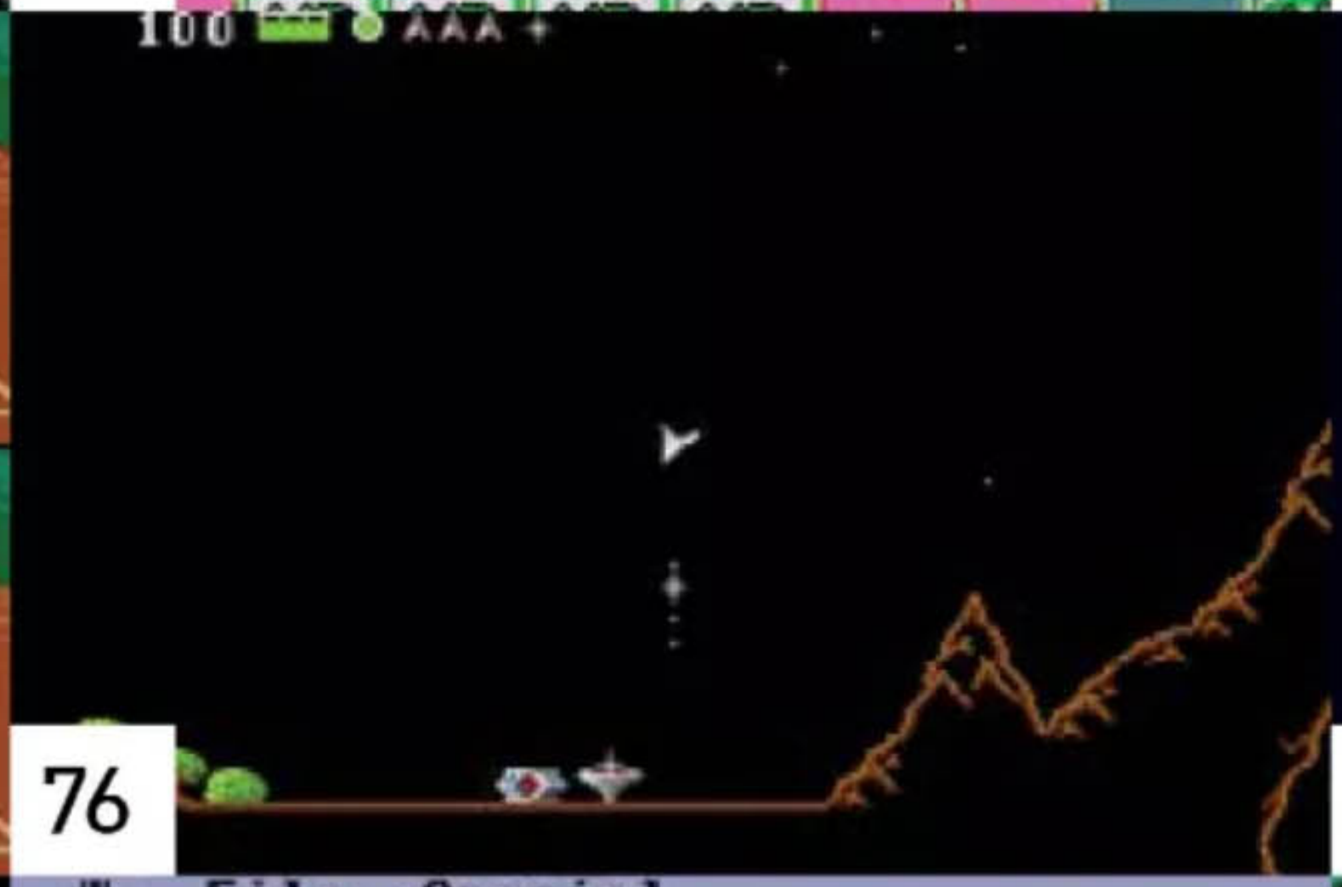
TENNIS CUP
TENNIS CUP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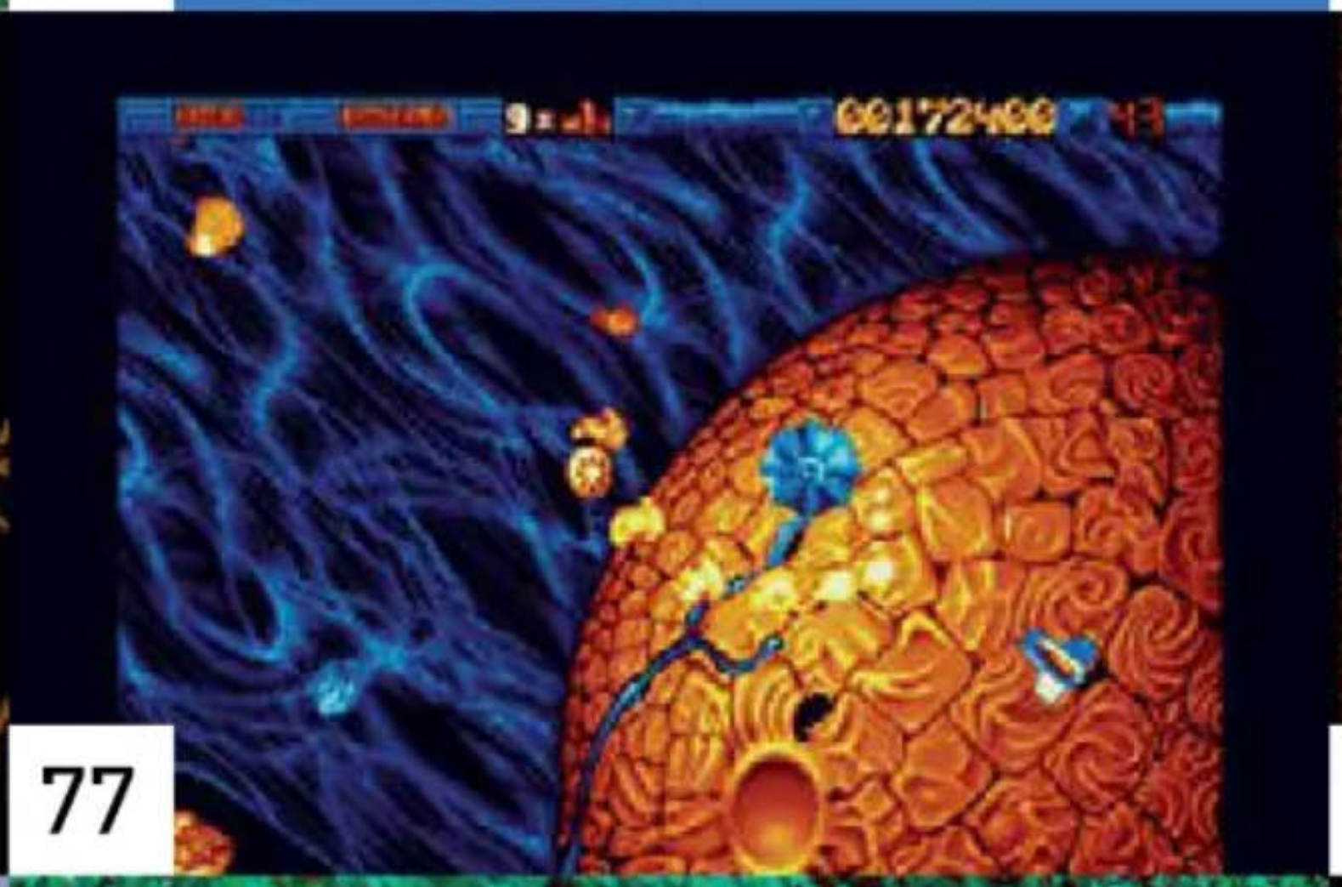
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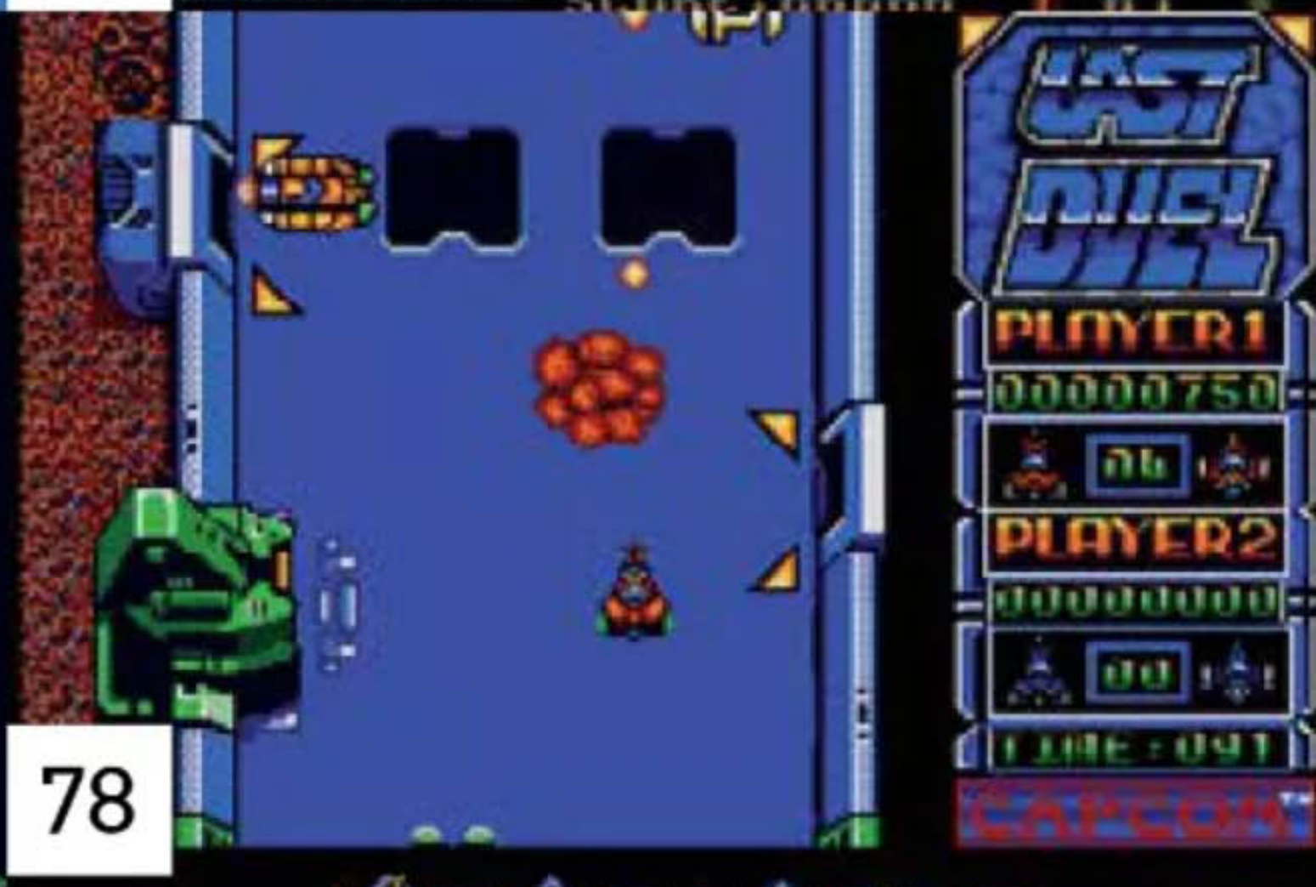
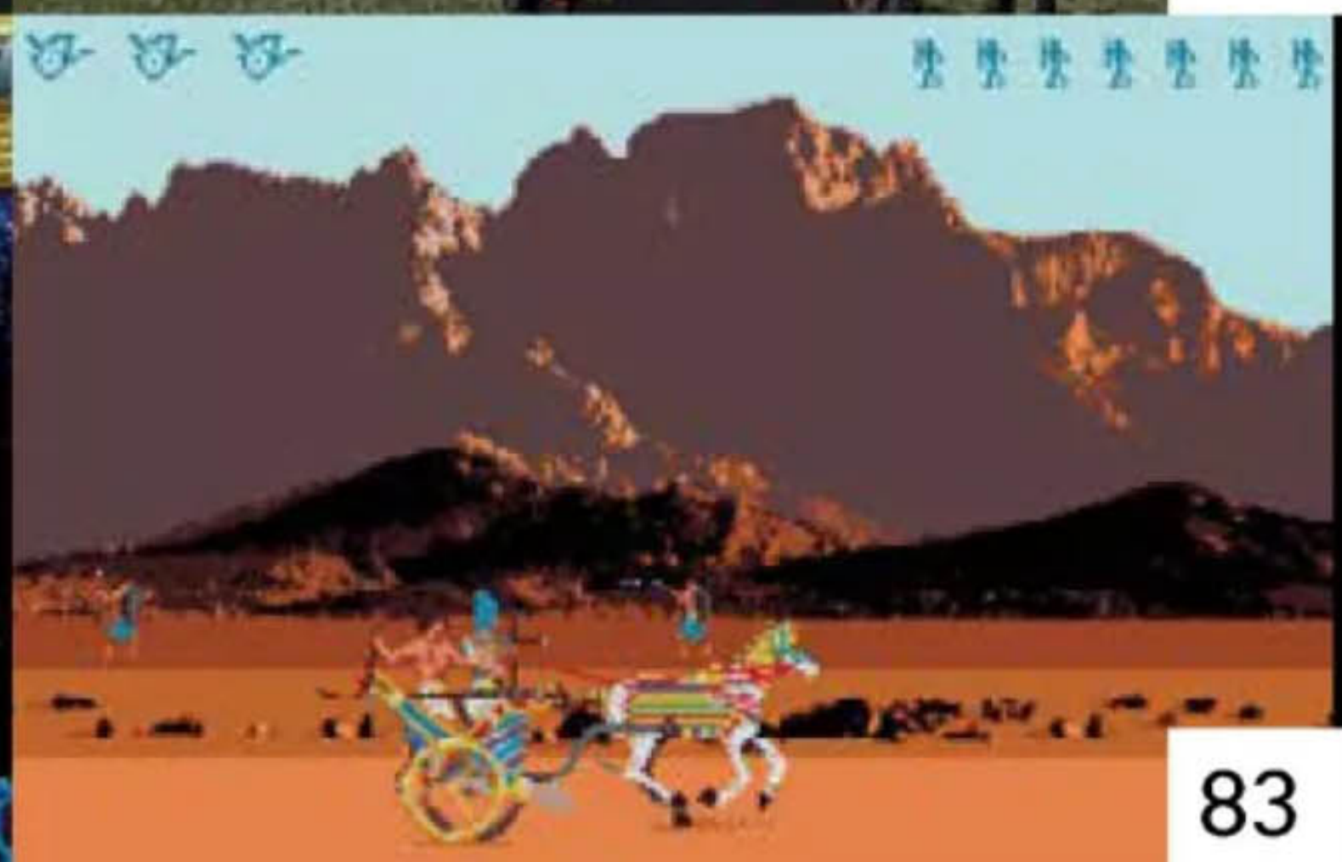

78
LAST DUEL
PLAYER1
PLAYER2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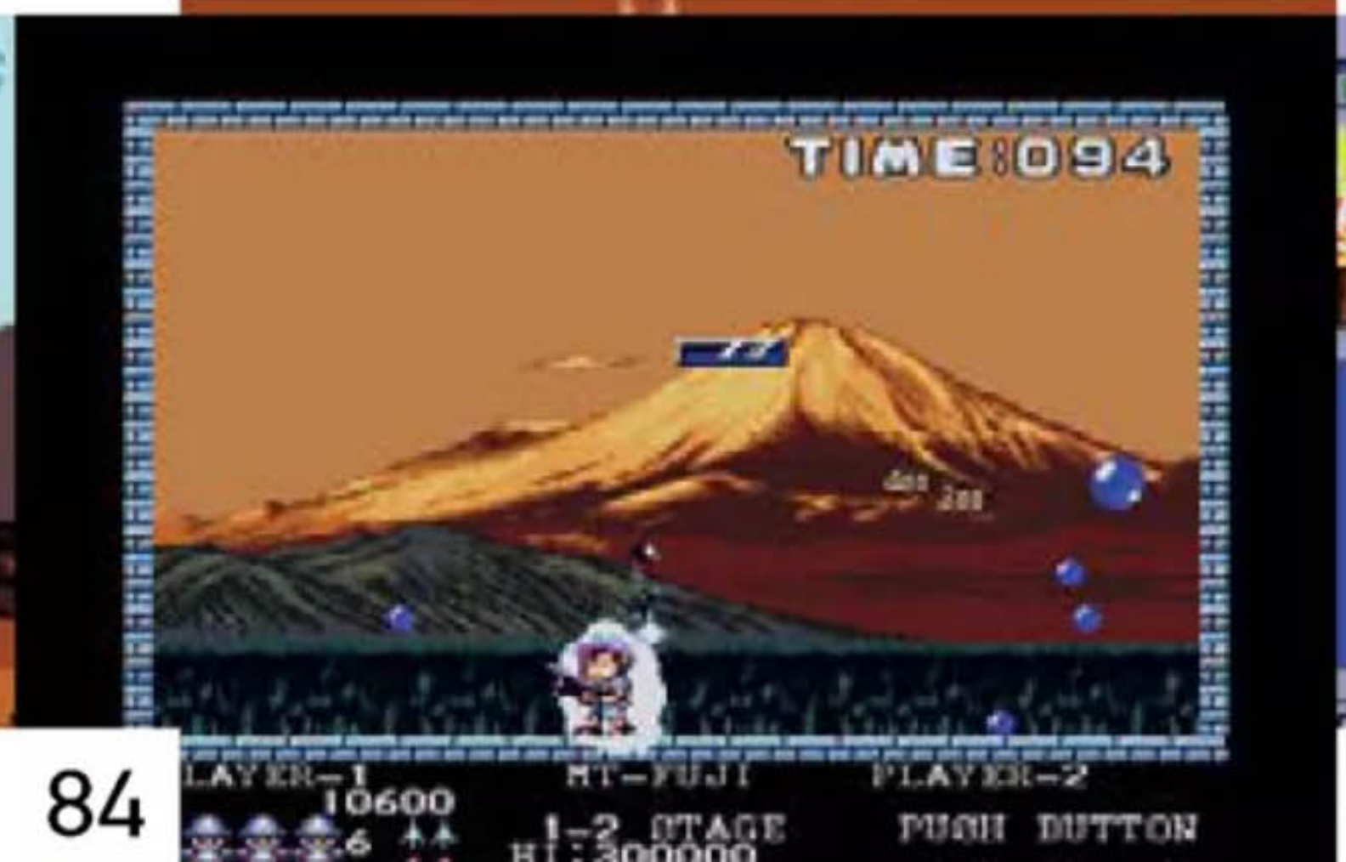
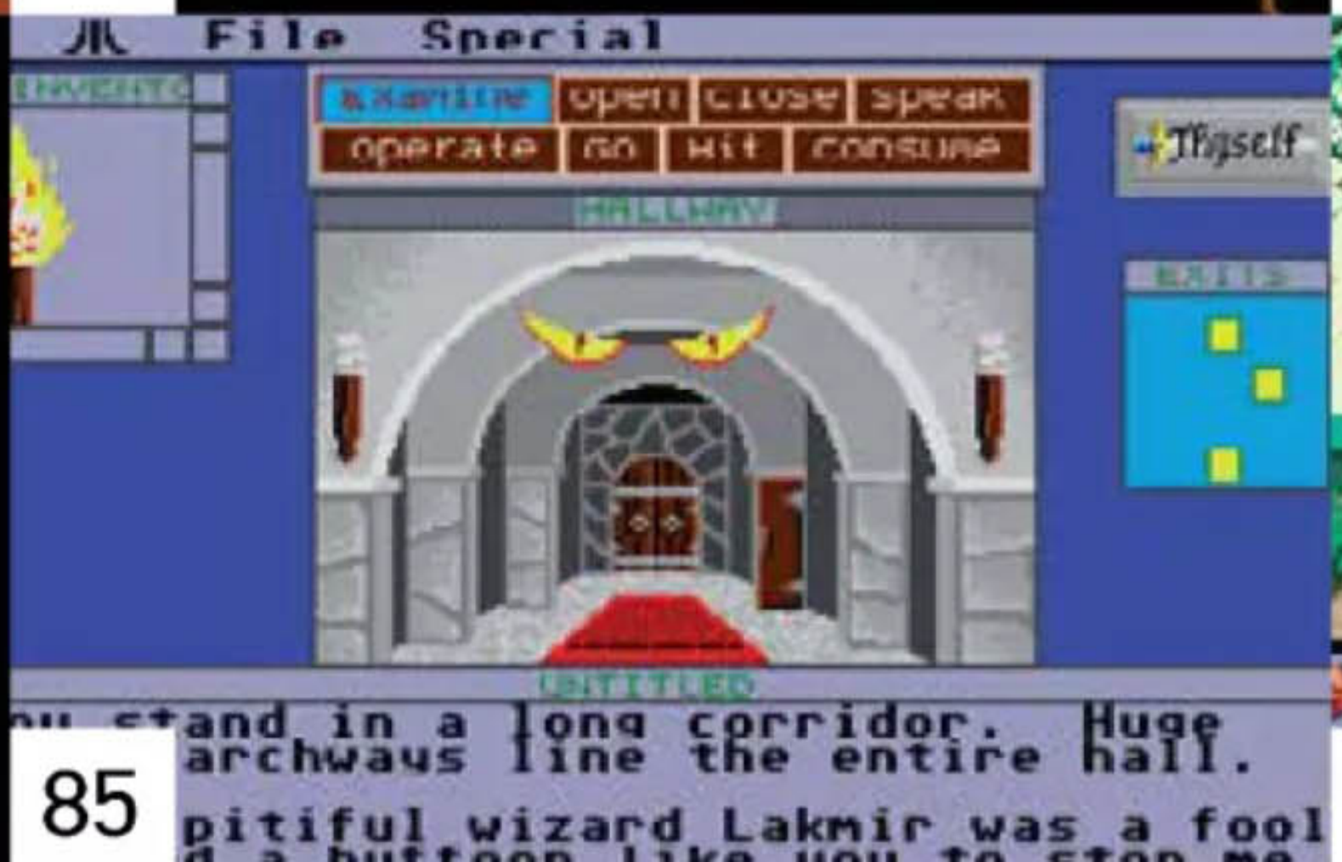
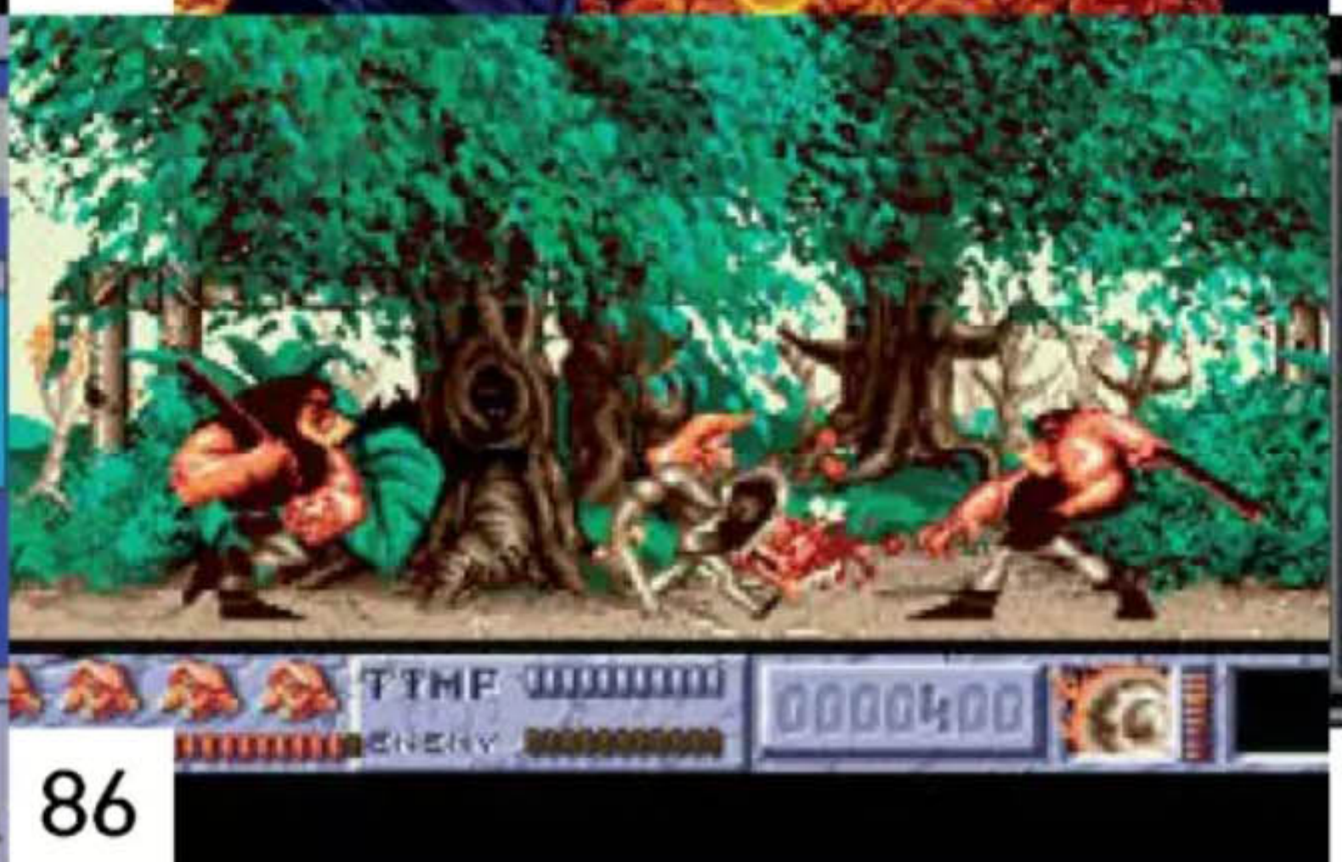

84
TIME:094
MT-FUJI
PUSH BUTTON


85
File Special
examine
open
close
speak
operate
go
hit
consume
Myself
...and in a long corridor. Huge archways line the entire hall.
pitiful wizard Lakmir was a fool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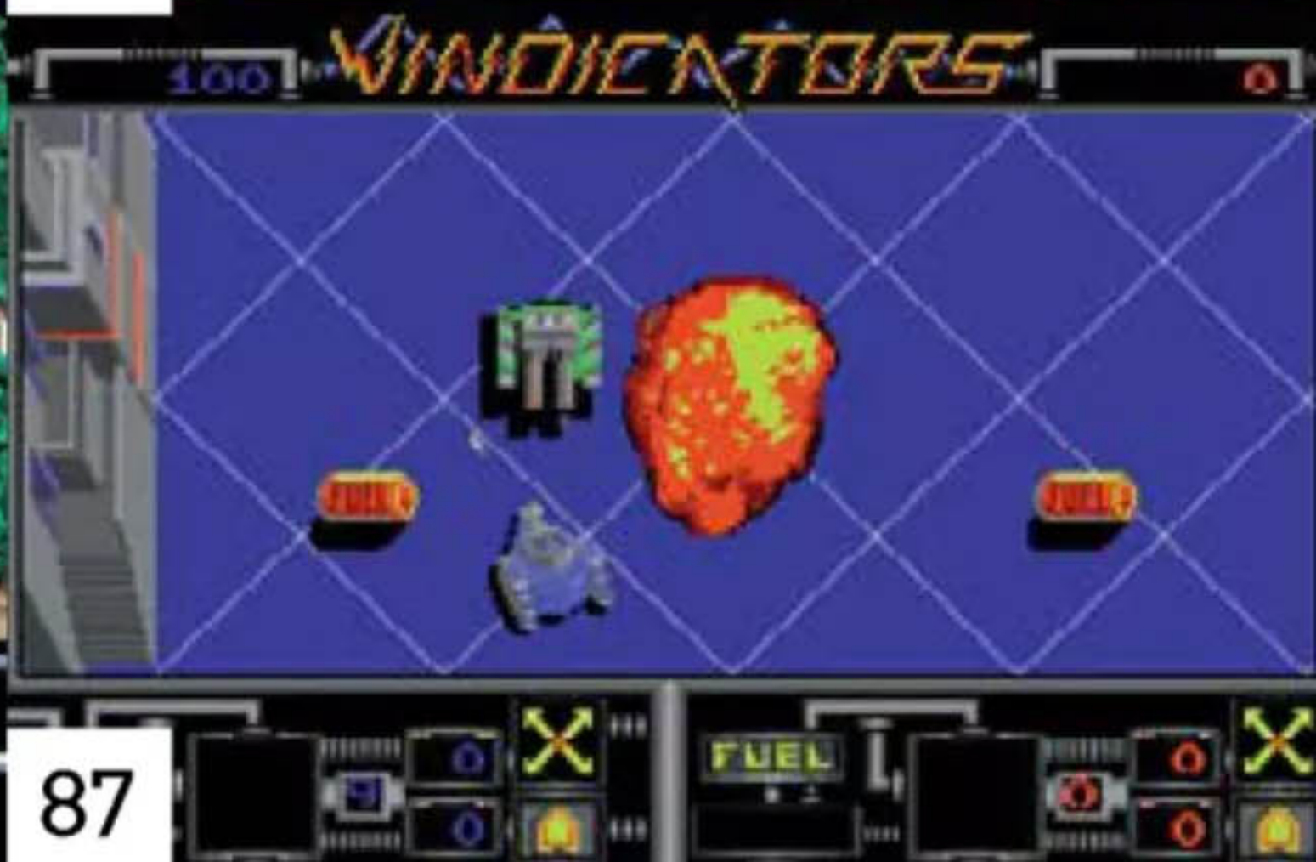
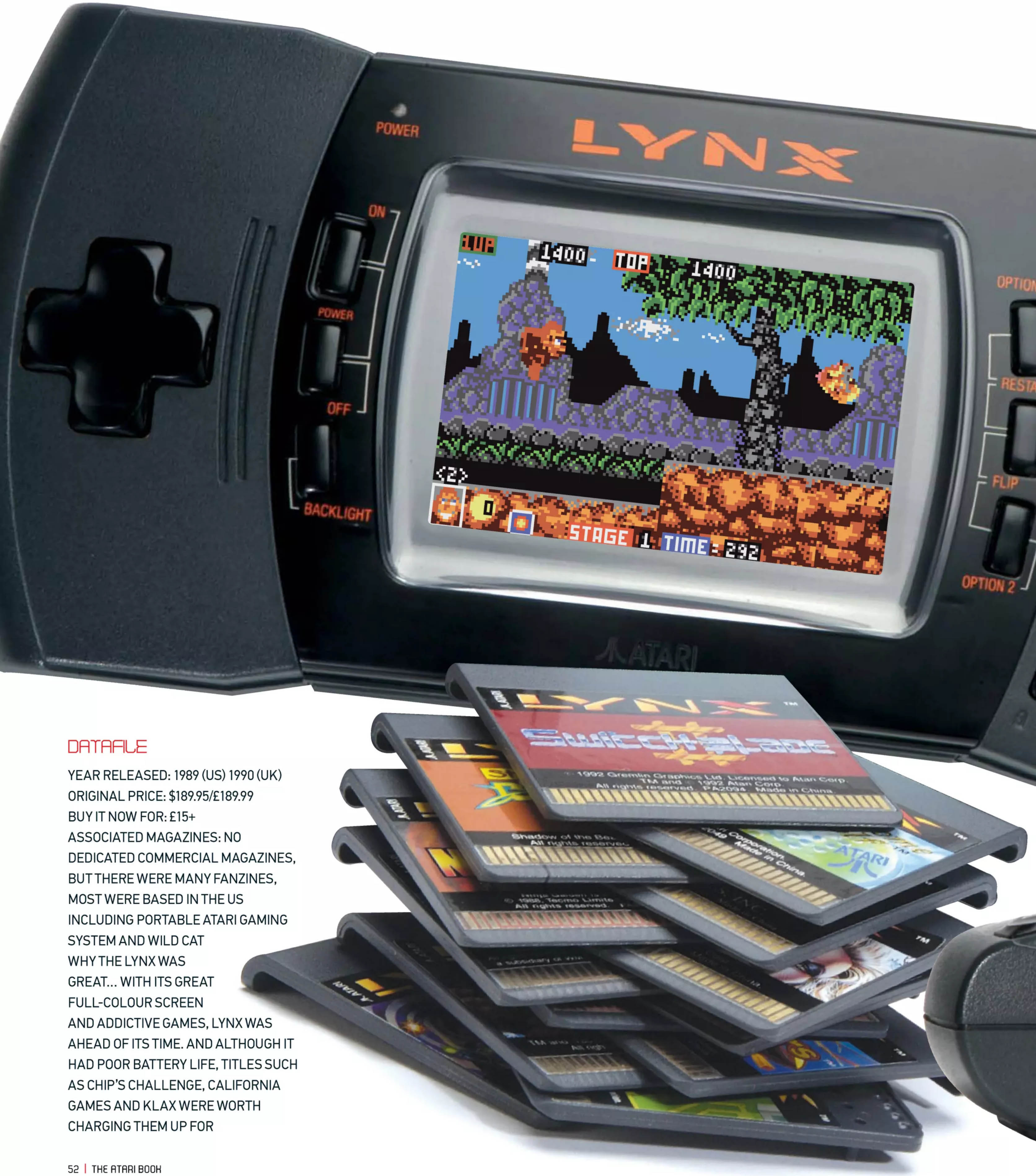

87
VINDICATORS
FUEL


POWER
LYNX
ON
POWER
OFF
BACKLIGHT
OPTION
RESTA
FLIP
OPTION 2
ATARI
1UP 1400 TOP 1400
STAGE 1 TIME 292
Switchblade
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DATAFILE

YEAR RELEASED: 1989 (US) 1990 (UK)
ORIGINAL PRICE: $189.95/£189.99
BUY IT NOW FOR: £15+
ASSOCIATED MAGAZINES: NO DEDICATED COMMERCIAL MAGAZINES, BUT THERE WERE MANY FANZINES, MOST WERE BASED IN THE US INCLUDING PORTABLE ATARI GAMING SYSTEM AND WILD CAT
WHY THE LYNX WAS GREAT... WITH ITS GREAT FULL-COLOUR SCREEN AND ADDICTIVE GAMES, LYNX WAS AHEAD OF ITS TIME. AND ALTHOUGH IT HAD POOR BATTERY LIFE, TITLES SUCH AS CHIP'S CHALLENGE, CALIFORNIA GAMES AND KLAX WERE WORTH CHARGING THEM UP FOR

ATARI LYNX

A FULL-COLOUR SCREEN, 16-BIT TECHNOLOGY AND ADDICTIVE GAMES. EPYX THOUGHT NINTENDO WOULD JUMP AT THE CHANCE OF SNAPPING UP 'THE HANDY', ITS FLEDGLING HANDHELD CONSOLE. BUT AS DAVID CROOKES REVEALS, EPYX WAS IN FOR A BIT OF SHOCK…

"Grab your suit and passport." Dave Needle looks up. It's three o'clock in the afternoon and standing in his office is David Morse, the CEO of Epyx, with an urgent look on his face. "I need you to join me on a flight to Japan. The plane leaves in three hours." Needle glances at his watch and then dashes home. Uncertain of exactly what is happening, he nevertheless grabs his best suit, takes his passport from his drawer and heads to San Francisco airport.

The trip

Morse and Epyx board member Joe Horowitz are waiting for him. They board the plane, making their way to the upper deck of the half-empty jumbo jet heading for the Land of the Rising Sun. As the plane takes off, Morse begins to explain what's happening. A private meeting has been set up with Nintendo's Shigeru Miyamoto, with one goal: selling the 'Handy'. The handhand console Needle and colleague RJ Mical have been working on needs to be sold. Epyx doesn't have the available finances to take the product to market and it might just be possible that Nintendo can be persuaded to buy it and sell it as one of its own products.

As they snack on shrimp, cheese and caviar, Needle begins to feel uneasy. Something isn't quite right. 20 years on, he recalls exactly what he was thinking, "We didn't have a planned presentation", he says.

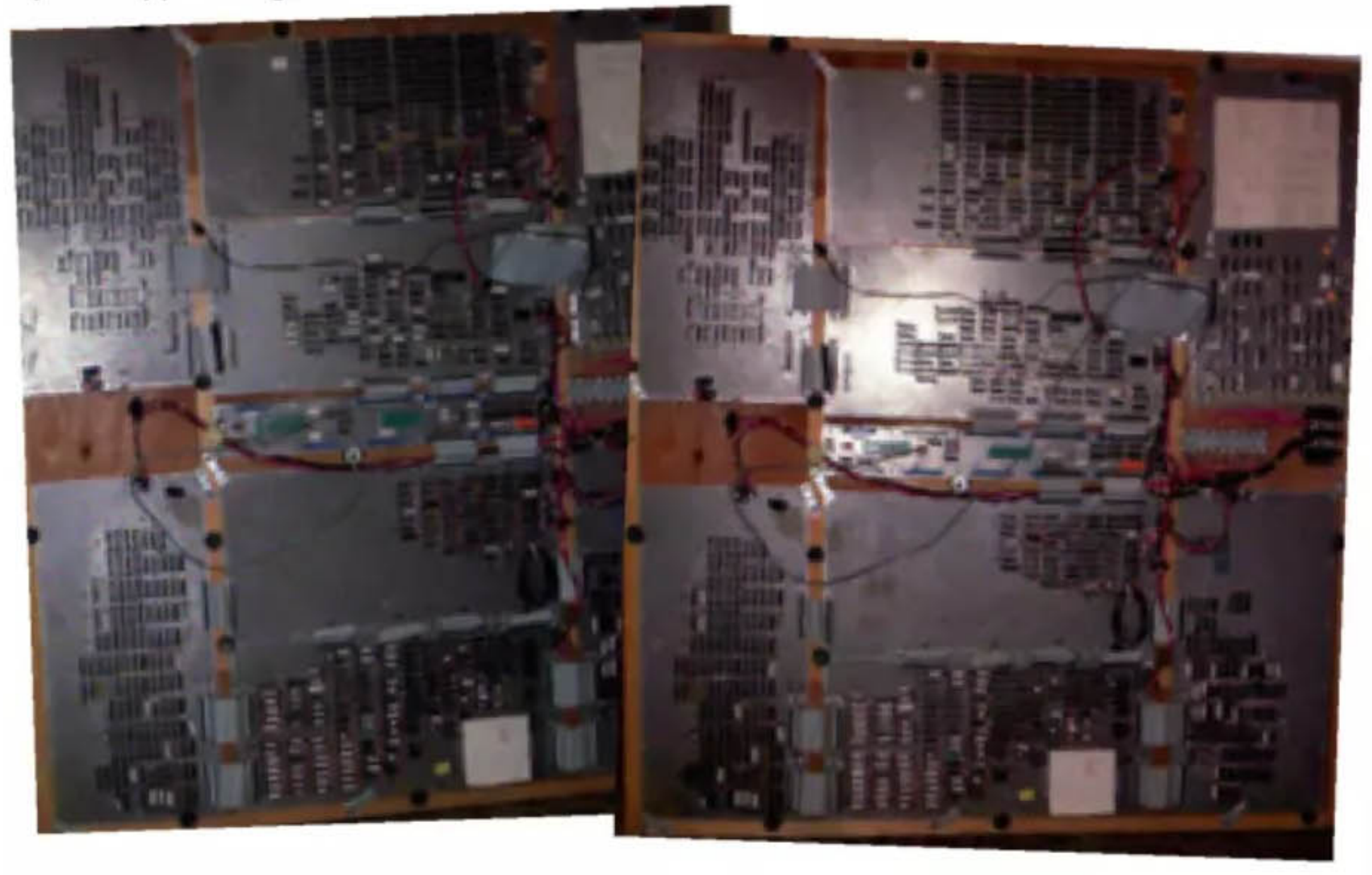
"I felt it wasn't the sort of pitch that you made off the cuff. It would take a lot of work to present it properly. It was Japan. I'd dealt with this sort of stuff before, and if we were going to be on their playing field we must play by their rules." Needle's instinct was right. Horowitz was convinced that they would be able to force their way into Nintendo's pocket. And while Morse remained sceptical, he was powerless to call a halt to proceedings. The flight to Japan was to prove lengthy.

The meeting had been set up by Henk Rogers, a Dutch-born entrepreneur known for successfully winning the handheld and console licences of *Tetris* from the former Soviet Ministry of Software and Hardware. Rogers had snatched the rights from under the nose of The Mirror chief Robert Maxwell. At this moment in time he was helping Epyx to make its important pitch to Nintendo.

INSTANT EXPERT

- The Lynx was the world's first colour handheld console and was initially sold with California Games.
- It came packaged with a case, a ComLynx cable and AC adapter (later replaced by six rapidly depleting AA batteries).
- The handheld was developed by Epyx using the talents of Dave Needle and RJ Mical and attracted Atari's interest even though both had been members of the Amiga design team.
- Needle and Mical had based the Lynx developer's kit around an Amiga.
- With a 3.5-inch screen, the Lynx visually packed a punch. The screen could even be flipped to allow for left or right-handed play.
- There was a two-inch speaker (the Lynx II had two speakers) and an eight-directional joypad.
- The console had two basic chips and they each had a name too: Mikey and Suzy. Aww. Both were 16-bit custom CMOS chips running at 16MHz and were run via an 8-bit CPU.

» These pictures show the actual working emulation of the Handy used during prototype stages.



What Epyx hadn't predicted, however, was the aggressive pitch put forward by Horowitz. "We were in the presence of Nintendo," Needle recalls. "Joe tried a hard sell, and as he spoke, David and I felt our faces turn red. It carried on for some time, and before long we were ordered out of the building. It was just too strong. Yet it didn't stop Joe – he got even louder. Luckily, Henk intervened and put an end to the pitch. Nintendo then allowed us to remain for a moment so the reps could show us something."

Enter Game Boy

A pair of small boxes were brought into the room. They were placed upon a table and opened in front of us. Needle, Morse and Horowitz glanced across at each other nervously, uncertain of what was about to be revealed. Inside each box was a set of handheld videogame consoles. There was a communications cable that enabled them to be played together, and it was ready to go to market immediately. "We were the first non-Nintendo people to learn of the existence of the Nintendo Game Boy," Needle says, recoiling even at the memory. "We were crushed. Joe was infuriated. The Nintendo boss left the room and we just sat there, wondering what to do next."

OTHER VERSIONS

LYNX II

One of the hallmarks of the Atari Lynx (other than poor battery power and the ability to flip the screen upside down so that left-handers could play) was its size. It was enormous. So when Atari decided that competition from the more compact Game Boy meant that the Lynx needed a revamp, one of the first things it did was cut it down to size.

But that's not all. As well as making the rubber hand-gripped Lynx II smaller, the battery power was enhanced, it added stereo sound and had a power-saving pause option that turned off the screen. It was also cheaper, retailing at £99, although it didn't come with any accessories or a game. "By removing the games cartridge, we have brought the price down below the psychological £100 price point," Atari's Peter Walker said at the time.

The Handy was an ambitious project. A full-colour, 16-bit handheld games console that was so far ahead of its time, it took 12 years before anyone bettered it. It was devised by Morse, Needle and Mical, working with a large, talented team at Epyx and had been drawn up on napkins in August 1986 while the trio enjoyed a meal in a plush little cafe in the affluent Foster City, California. They were already heavily involved in the computer industry: Morse had been the mastermind of the Amiga home computer, and RJ and Needle were members of that team and had played a large part in its creation. It was time to start something new.

"We were really intrigued by the idea of creating a handheld console," says Needle. "We knew it was possible and so we cracked on with it straight away." As for the 'Handy' name: "I can't remember how we got the name," says Mical. "Everyone was popping up with clever stuff in those days. They were heady times filled with promise and productivity. Man, we jammed."

Before long, Epyx had assembled a team large enough to look after the software, hardware, industrial design and audio facilities of the console. Morse, who had been installed as Epyx's CEO after founder Jim Connelley decided to leave, put the entire process together and led the project from the start.

The first prototype of the Epyx's handheld had a black-and-white screen. "But it didn't have the 'zing' we thought it ought to have," says Needle. "Many people in the group wanted us to stick to black and white. They said the cost, battery life, weight and viewability effects of changing to colour would hurt the product." Yet Needle and Mical stuck to their guns and the project shifted to colour – 4,096 of them, the same number as the Amiga. "It was a continuation but we weren't creating a handheld Amiga," says Mical. "The leading-edge display was the most expensive component, so the colour choice was one of economy." Needle adds: "If the low-cost glass and drivers would have supported a million colours, I would have done it." It was decided that the 65C02 chip would be used since it outperformed the rest and the Handy became the first gaming console with hardware support for sprite zooming and distortion. It allowed for fast pseudo three-dimensional games, making life easy for programmers.

"Many engineers knew it and would happily program in assembly for it," Mical says. "There was a large existing body of code because the 65C02 was in popular systems such as the Commodore 64. Best of all, though, it was cheap and fast. Needle explains: "I invented the technique for planar expansion/shrinking capability for an arcade game I had done several years before. It was a space alien/earth attack game with a 3D rotating planet, 3D giant robots, ground-tracking shadows and was pretty cool. We also came up with a way of avoiding filled polygons by taking a triangle and sizing it as you wished. It's not as great as a real polygon, but this way the surfaces had full texture all the time with absolutely no performance penalty."

While work progressed on the hardware, Epyx continued to produce videogames such as *Chip's Challenge* and a Handy department was created. At one point it was sealed off from the rest of the building for security purposes. It was decided that cartridges would be used for the games. Although there had been reports that games were going to be loaded from tape, Mical says there was no truth in them. "We did think about hard disk a little…"

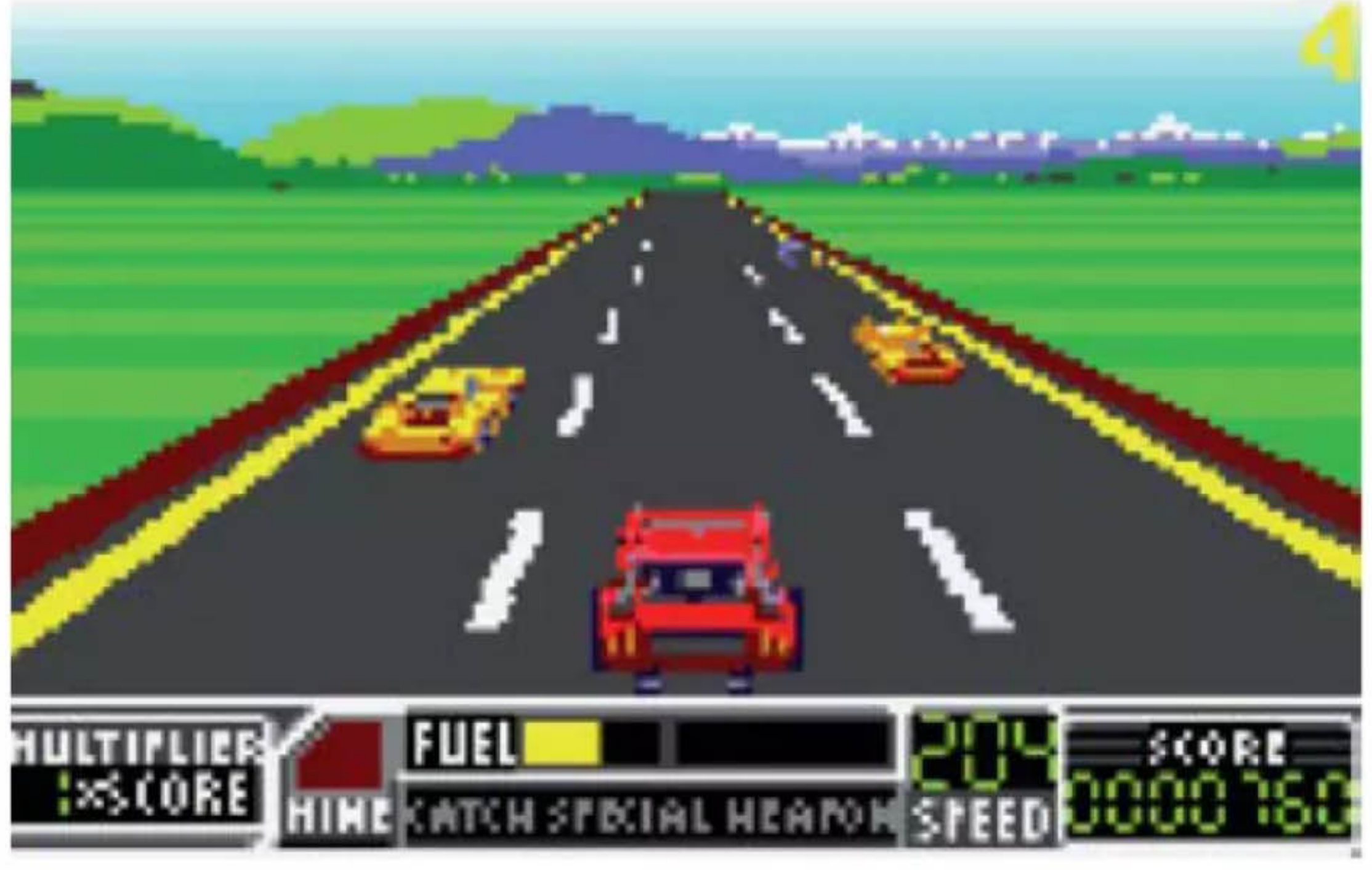
ANTI RED-EYE

Although RJ Mical was happy with the Lynx, saying, "We got exactly what we set out to create", one feature he would have liked was infrared. Named RedEye, the infrared capability was demonstrated in the lab but it was decided to go for the ComLynx instead.

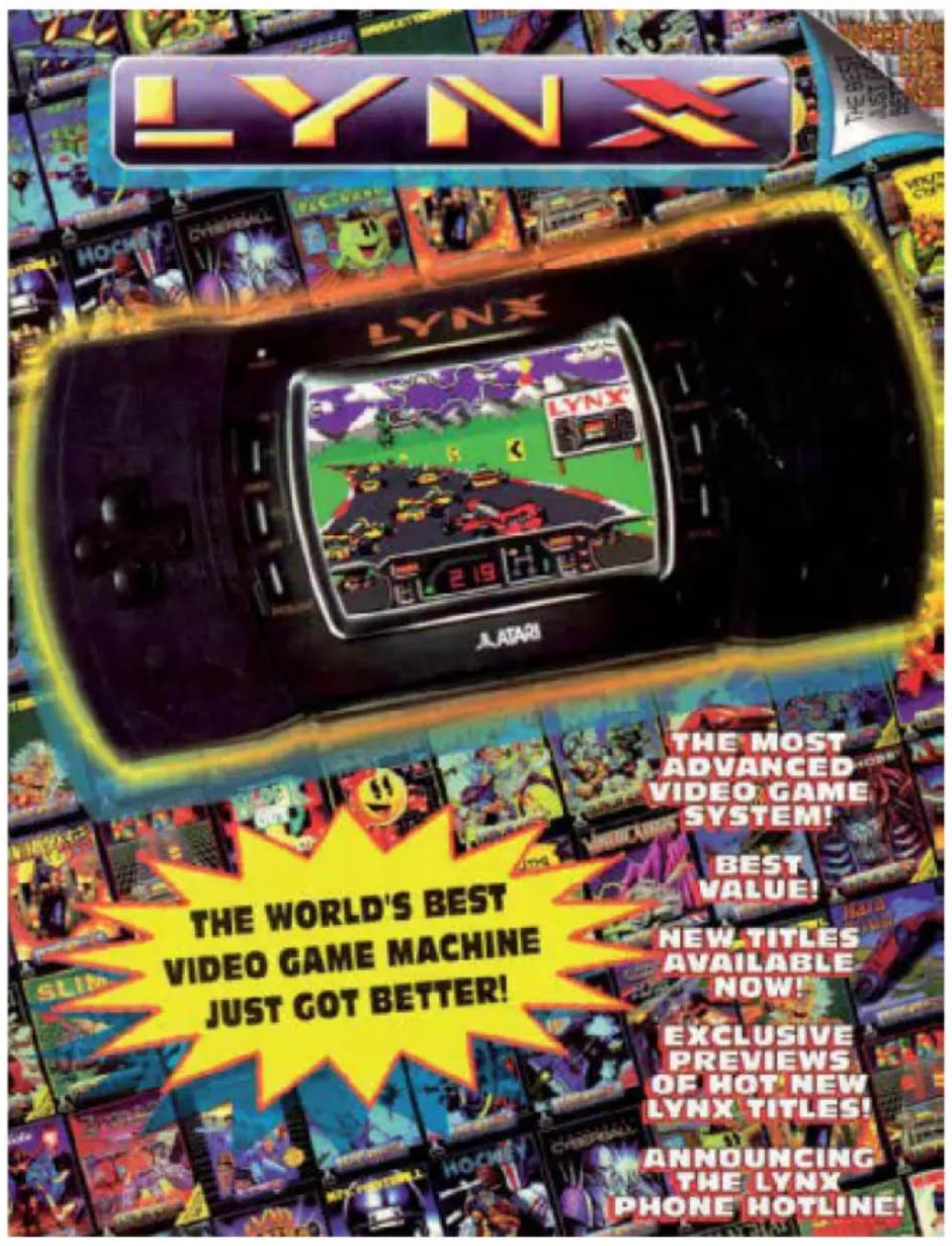
"RedEye would have been cool," says Mical. "You would need to maintain 'line of sight' between players, though, and that could have been a problem. We dreaded the feared 'crossing legs' boy who would cross his legs and block his unit from the network."

Yet by the time the machine was ready, Epyx had hit financial problems. The Commodore 64 market, which was Epyx's core audience, wasn't pulling in the cash any more. It had also invested in VCR games but with little success. Staff levels were falling from around two hundred to just 20 employees. If the Handy was ever going to be released it would need the backing of another company. Hence, the ill-fated journey that led the group to knock at the hallowed doors of Nintendo…

When that fell through, Horowitz decided to approach Atari, and made a phone call to Jack Tramiel, the chief executive at that time. Atari had already tried its hand at producing a portable machine, the Atari 2200, which



» The Lynx's conversion of *RoadBlasters* was absolutely stunning and proved just what was possible on Atari's handheld when in skilled hands.


LYNX
LYNX
ATARI
THE WORLD'S BEST VIDEO GAME MACHINE JUST GOT BETTER!
THE MOST ADVANCED VIDEO GAME SYSTEM!
BEST VALUE!
NEW TITLES AVAILABLE NOW!
EXCLUSIVE PREVIEWS OF HOT NEW LYNX TITLES!
ANNOUNCING THE LYNX PHONE HOTLINE!

» Atari's Lynx catalogue showed off the large number of games.

COMMUNITY

The Atari Times

www.ataritimes.com

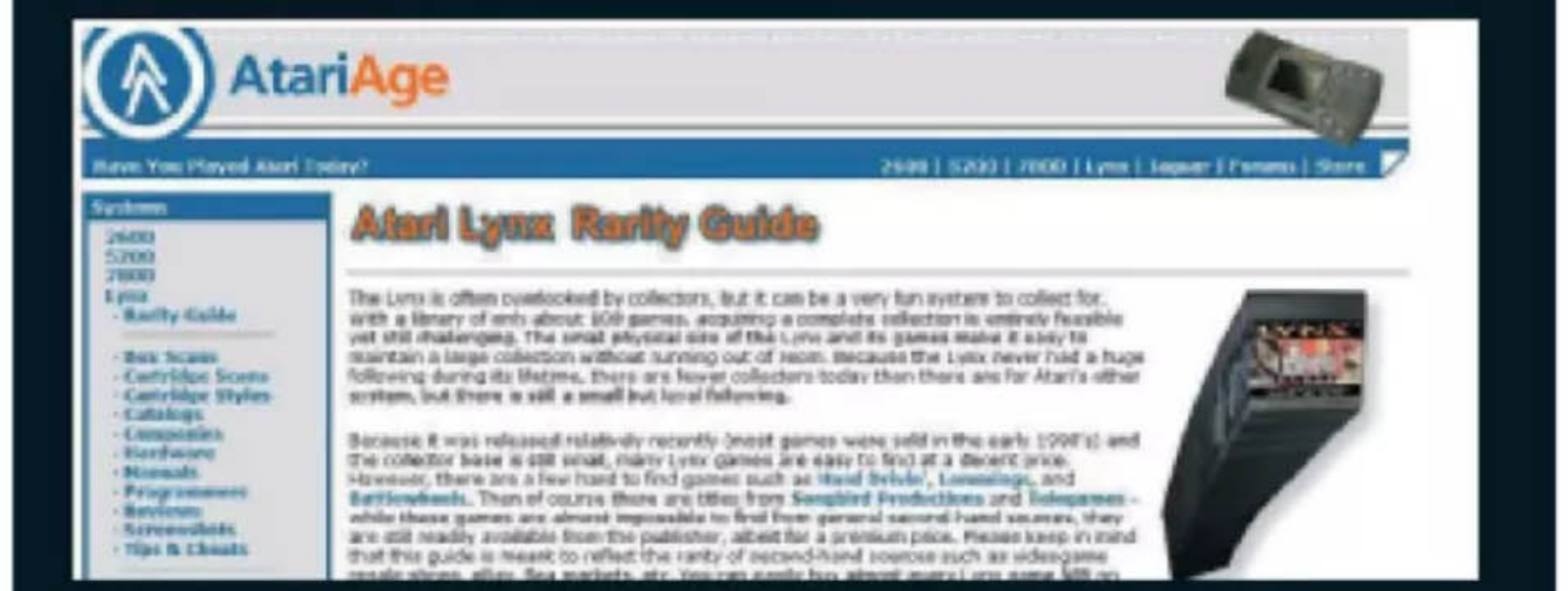
Since 1996, this site has been an essential Atari resource and is packed with Lynx features, including reviews of both commercial and homebrew games. With reviews updated as and when new games arrive, the site is a brilliant place to start when reading up on the latest for the handheld.

The Atari Times
Increase traffic to your website. Try Google AdWords.
Home
Forum
Search
Contact
Atari Lynx
LYNX

Atari Age

www.atariage.com

If you are trying to track down and play some games for your Lynx, Atari Age has not only a great many intricate details (from the three different cartridge styles and company profiles to tips and cheats), it also has an excellent rarity guide, listing every Lynx game created. Not to mention its bustling forum.



Songbird Productions

http://songbird-productions.com

When the Atari Lynx died a commercial death, its fan base took over in much the same way as with the majority of retro machines. Songbird Productions was set up in 1999 to produce games such as Loopz and Total Carnage for the Lynx and Jaguar. You can also browse through its catalogue via the website.

Songbird Productions
Home
News
Projects
Order
About
Links

Matthias Domin's Atari Lynx page

www.mdgames.de/lynx_eng.htm

If you're pretty nifty in the coding department, then Matthias Domin has put together a fine selection of tools that will be of great assistance when taking the initial steps and using your talents to create new Lynx content. There are also some great little games on there to try out.

Programming-demos:
A
B
C
D
E
F
G
H

was based on the Atari 2600. But it just couldn't seem to get it right. As time went on, however, Atari began to ignore the growing stature of consoles and had become heavily involved in a business war against Commodore. Tramiel finally realised the worth of consoles when the NES stormed onto the market – so he was rather taken by the Handy, believing it to be a great way back to console dominance.

Soon after Horowitz approached Atari, Jack's son, Sam, went to Epyx. He was greeted by Joe and showed around. They then sat in an office and discussed some terms. It was eventually decided that Atari would manufacture and market the handheld console and Epyx would create the videogames, getting paid by Atari for each title that was produced. However, in the contract was a clause that issued Epyx a deadline. For example, the company had 60 days to fix any bugs that Atari said needed to be rectified. Needle says: "Atari routinely waited until the end of the Epyx time period to comment on the Epyx fixes. There was then inadequate time for Epyx to make the fixes." According to Needle, Atari decided to "punish" Epyx by withholding payment. In the end, this sent Epyx into financial turmoil, leading to its inevitable bankruptcy. Atari did hold out a lifeline – paying Epyx, but only on the condition that it handed over the Handy.

The deal

The deal obviously upset Mical and Needle. They asked their lawyers if they could leave Epyx, but they were advised that it would be seen as an overt action by them to damage Atari and that they would almost certainly be sued. The pair remained at Epyx until the hardware handover was complete, turning down an offer from Sam to work at Atari.

With Morse, Mical and Needle's involvement in the project coming to an abrupt halt, Atari took the Handy and renamed it the 'Lynx'. It was two years before the company released the console in September 1989 however, and by that time Nintendo's Game Boy had also been released. "Looking back, if we had decided not to go colour," says Needle, "We would have been a zero. The Game Boy really would have trounced us." As it was, the colour feature of the Lynx kept the machine in the limelight, although it wasn't easy. The Lynx cost $189.95 and the Game Boy retailed for $89.95. Many felt the Lynx was too expensive and there was a vicious circle of too few purchases, putting off third-party developers, which, in turn, lead to fewer purchases.

As sales continued to fall, Atari tweaked the machine and created the Lynx II. It retailed for half the price of the original, and was smaller and cheaper to make.

Needle wasn't convinced however. "During the handover, [Atari's] mechanical engineer made some seemingly pointless changes," he said. "The guy told me that he always liked to put a piece of himself in any product he worked on. He changed the backlight electronics and the transformer design and reduced the battery life. But he also changed the high voltage capacitor to one with considerably more leakage at the oscillation frequency and it generated considerable heat. The new load on the batteries caused them to overheat." Nevertheless, sales did pick up.

Then along came Sega, who introduced us to the Game Gear in 1991. For Lynx, this meant the end was nigh. Although the Lynx remained the superior machine, the Game Gear benefited from Sega's advertising drive and the Japanese company's resources. What was more frustrating was Game Gear's similarities to Lynx.

LYNX
ONLY $99.95
LOTS OF GREAT GAMES AVAILABLE NOW!
ATARI

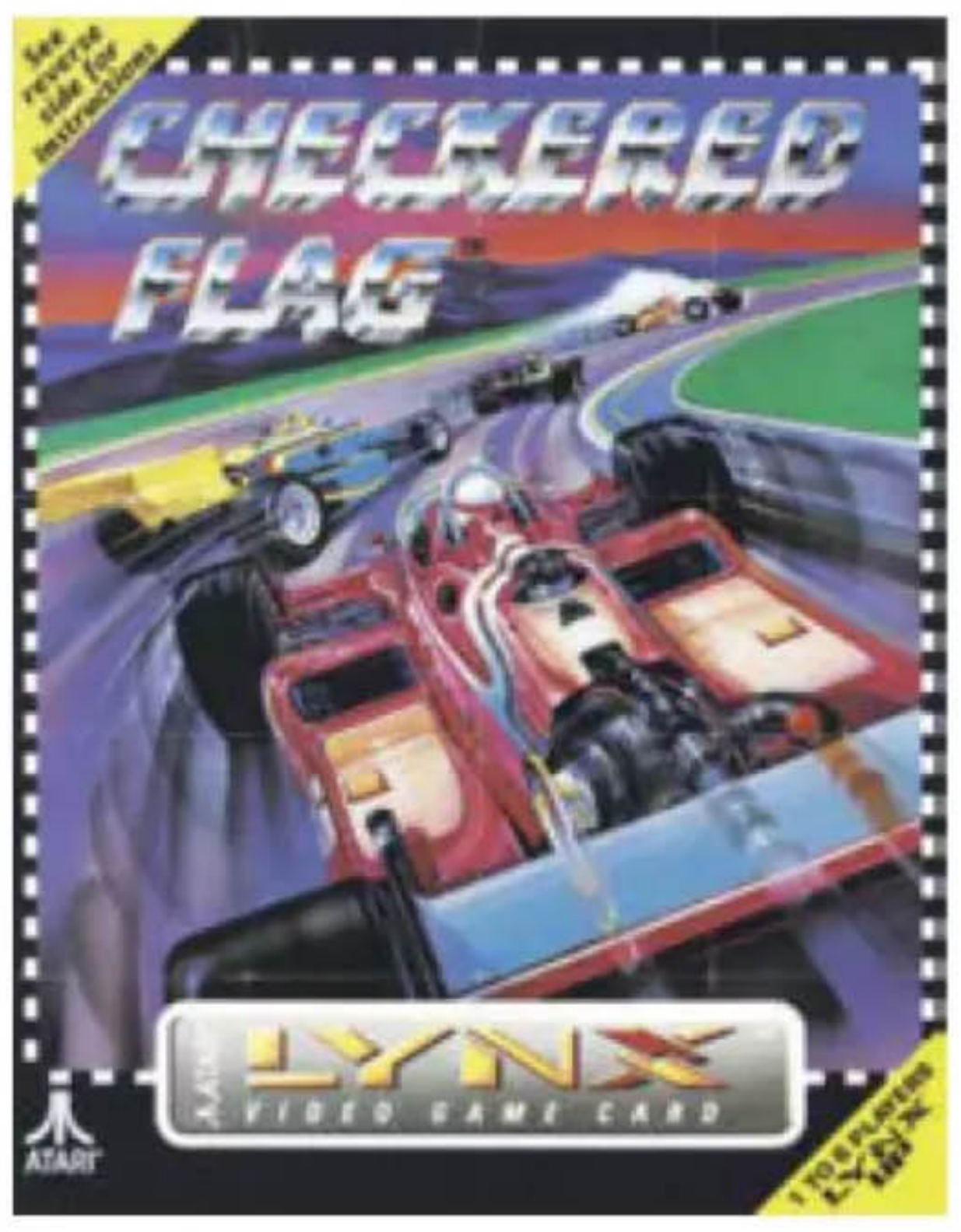
» In an attempt to boost sales, Atari reduced the price of the Lynx to just a whisker below $100.

LYNX
Hard Drivin'

» Cartridges came in several different forms: flat, ridged and curved lip (as above).

LYNX
CHIP'S CHALLENGE

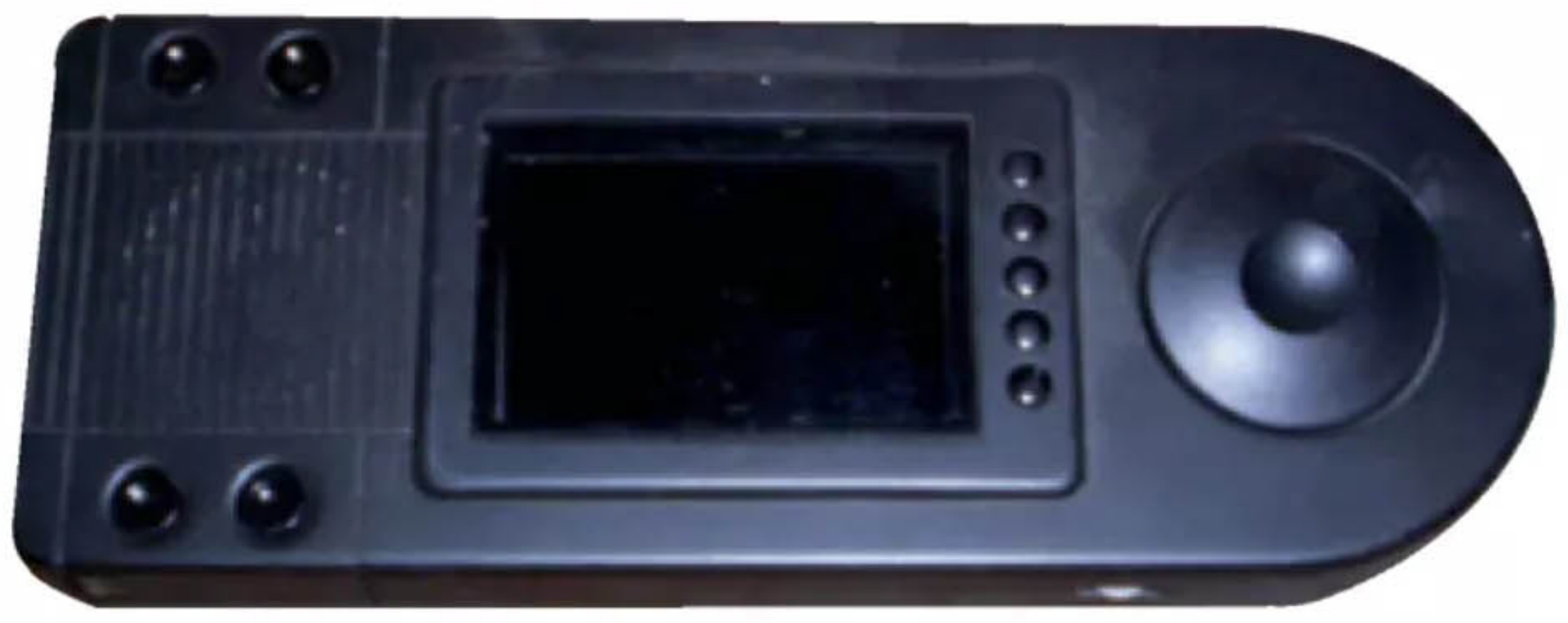
» Wonderful puzzle game *Chip's Challenge* was one of the Lynx's most endearing titles.



» *Checkered Flag* was a top racer for the Lynx and highly sought after.

Championship RALLY
LYNX

» One of the many independently produced games by Songbird Productions.



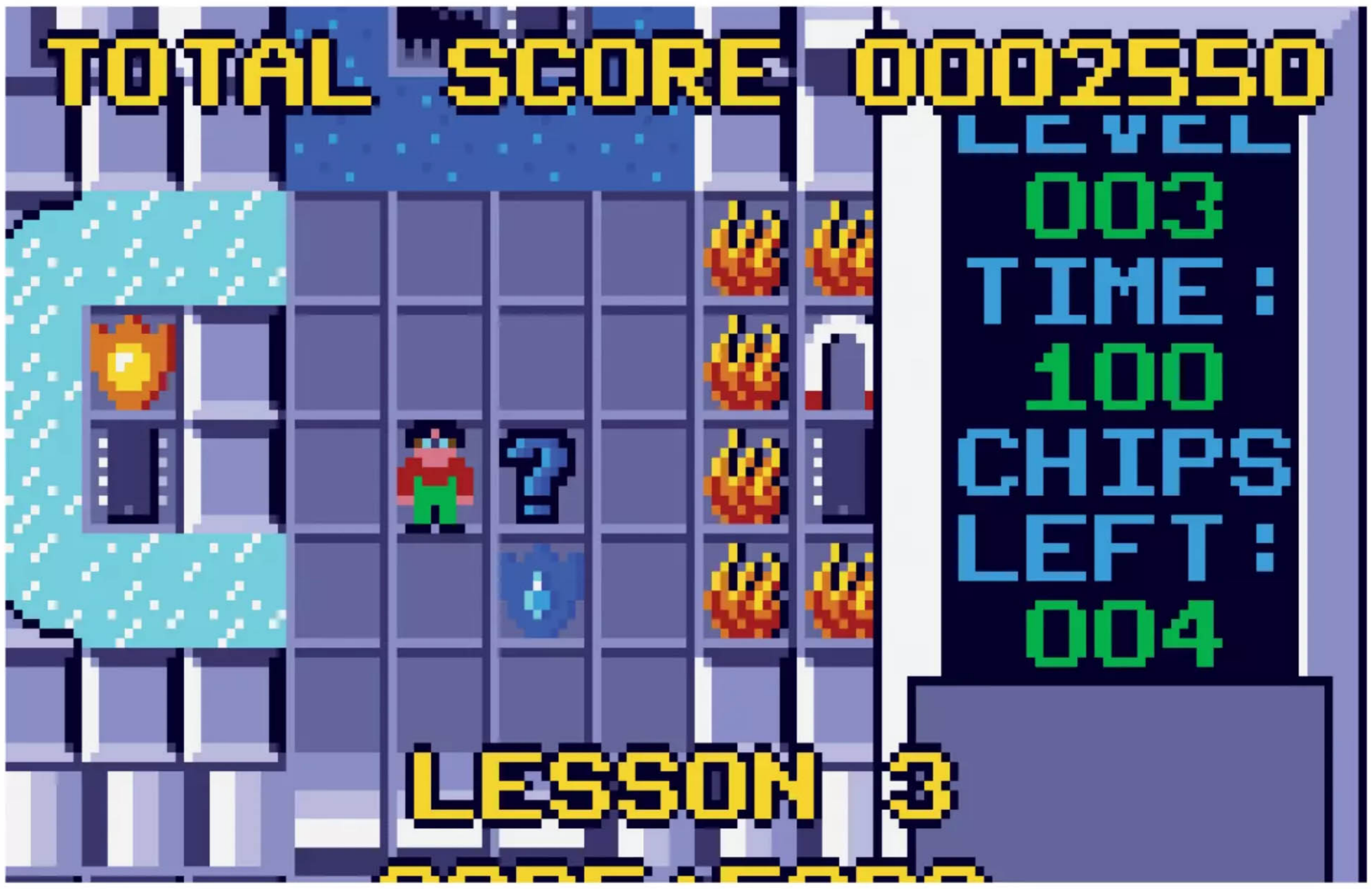
» A plastic mock-up of one of the alternative designs for the first Handy.

"Game Gear was an interesting issue," Needle remembers. "Sega was shown all of the Handy's innards and schematics and specs as part of an attempt to partner with them after the Epyx marketing fiasco. And to see what I consider to be pretty much a copy of the Handy was a bit infuriating." He continues, "I had become friends with one of the engineers at Sega, and during the last development stages of the Game Gear, after I had already left Epyx, Sega hired me to help with a few lingering product issues. I went to their Japan facility and they showed me the problems they were having. Some issues were just weak engineering on their part, showing me that they did not understand the functionality of the hardware they were copying. They had the output palette wrong, among other things."

Despite the problems, Dave Needle remains proud of the Lynx – "always have, always will", he says. Among his favourite games for the once groundbreaking handheld are *Chip's Challenge*, *Gates Of Zendocon* and *California Games*. "It's a matter of pride that no one created anything better for 12 years," he adds. When it comes to what went wrong, Mical maintains that, "All the Lynx needed was low cost and a huge library of software. But I place the blame for both of these in Atari's lap…"

ATARI LYNX: PERFECT 10 GAMES

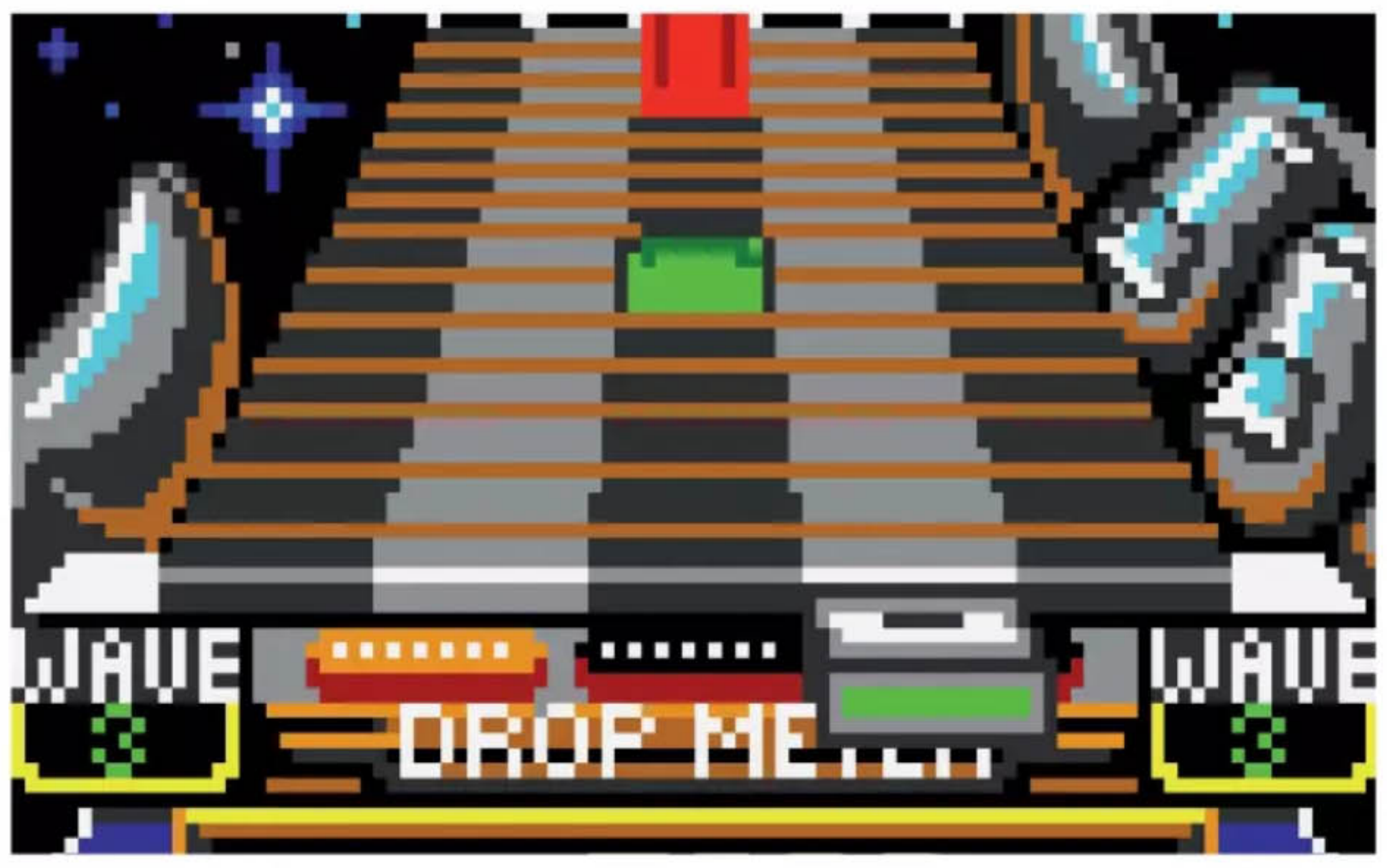
IT MAY HAVE BEEN KO'D BY THE GAME BOY, BUT ATARI'S LYNX WAS STILL HOME TO SOME WONDERFUL GAMES AND ARCADE CONVERSIONS. DON'T BELIEVE US? THEN CHECK THIS LOVELY LITTLE SELECTION OF CLASSICS OUT



CHIP'S CHALLENGE

» RELEASED: 1989 » PUBLISHED BY: EPYX
» CREATED BY: CHUCK SOMMERVILLE

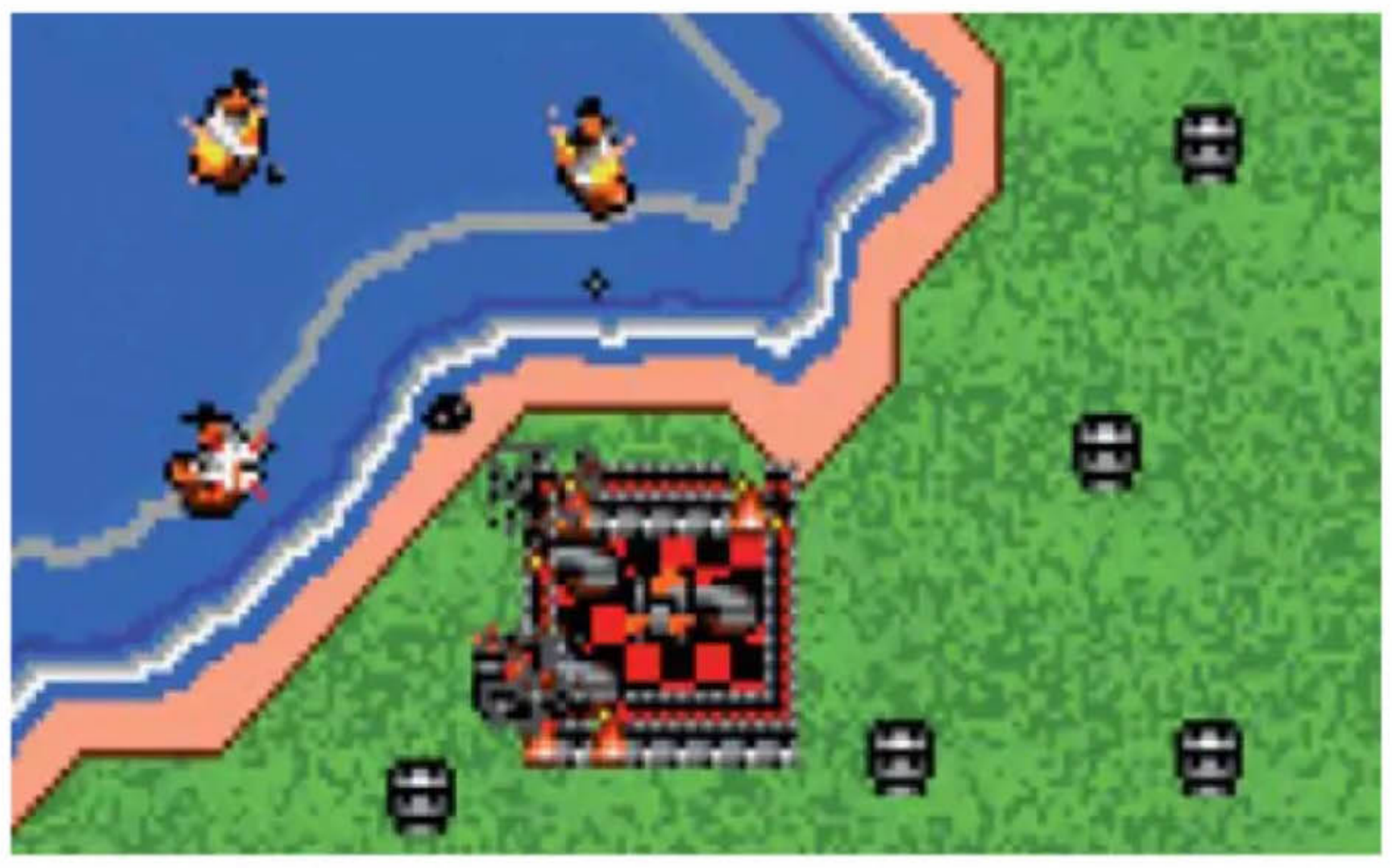
1 Puzzle games are almost two a penny on the Atari Lynx, but when the quality is as good as *Chip's Challenge* you don't tend to mind them cluttering up the console (or your perfect ten columns for that matter). While the concept itself is not particularly original (you basically have to move Chip around each maze in search of a set amount of computer chips) it has been put together with so much love, care and attention that you can't help but become smitten with it. Chip himself may be only a few pixels high, but he's full of character and you can't help but feel for him as he carries out his tricky quest. It may have been ported over to a number of different machines since its release, but the bite-size puzzles make this perfect fodder for Atari's handheld.



KLAX

» RELEASED: 1990 » PUBLISHED BY: ATARI
» CREATED BY: GREG OMI

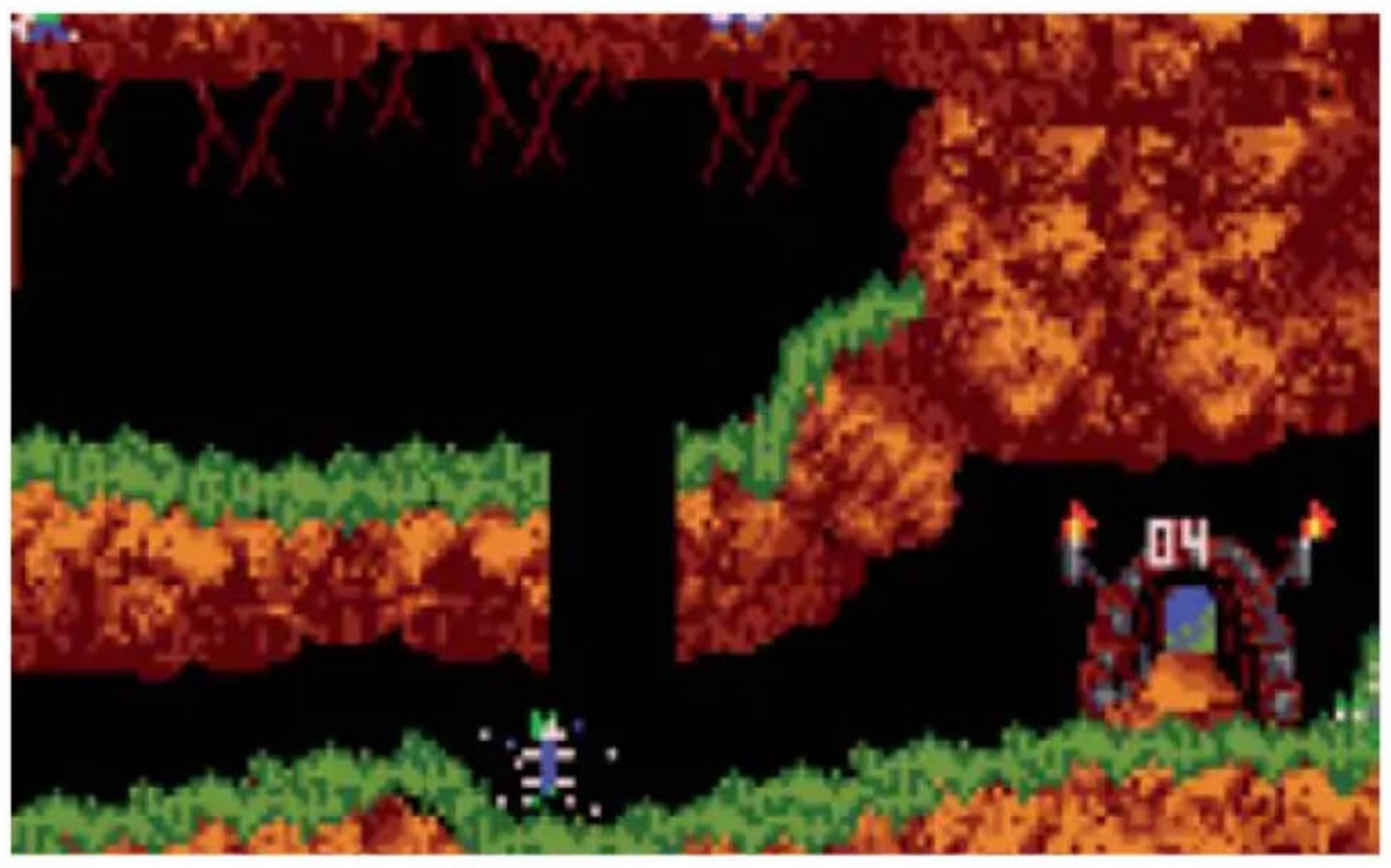
2 *Klax* is easily deserving of a place in our top ten and not just because it features the sexiest videogame voice of all time (if you know someone who sounds sexier then let us know). Converted from the popular Tengen coin-op, *Klax* is a near perfect arcade adaptation that not only captures the authenticity of the original arcade game but also proves that the Lynx was no slouch when it came to hosting great puzzlers. Deceptively simple to pick up – all you have to do is stack three tiles of the same colour on top of each other, either horizontally, vertically or digonally – *Klax* is Atari's answers to the mighty *Tetris*. And we actually prefer it!



RAMPART

» RELEASED: 1991 » PUBLISHED BY: ATARI
» CREATED BY: JEROME STRACH, ERIC GINNER

3 It might not match the majesty of its arcade parent, but there's still plenty to love about this extremely slick Lynx conversion. While it suffers from the obvious lack of a trackball, it still plays surprisingly well and doesn't let you down on later levels once the action speeds up. The mix of *Tetris*-styled wall building and strategic blasting works perfectly and makes for a very unique experience. It's a lot tougher than the arcade original (mainly because all of the enemy ships can now drop off ground forces) and the loss of the third player is a bit of a shame (the Lynx could have easily included it), but this is otherwise another cracking conversion.



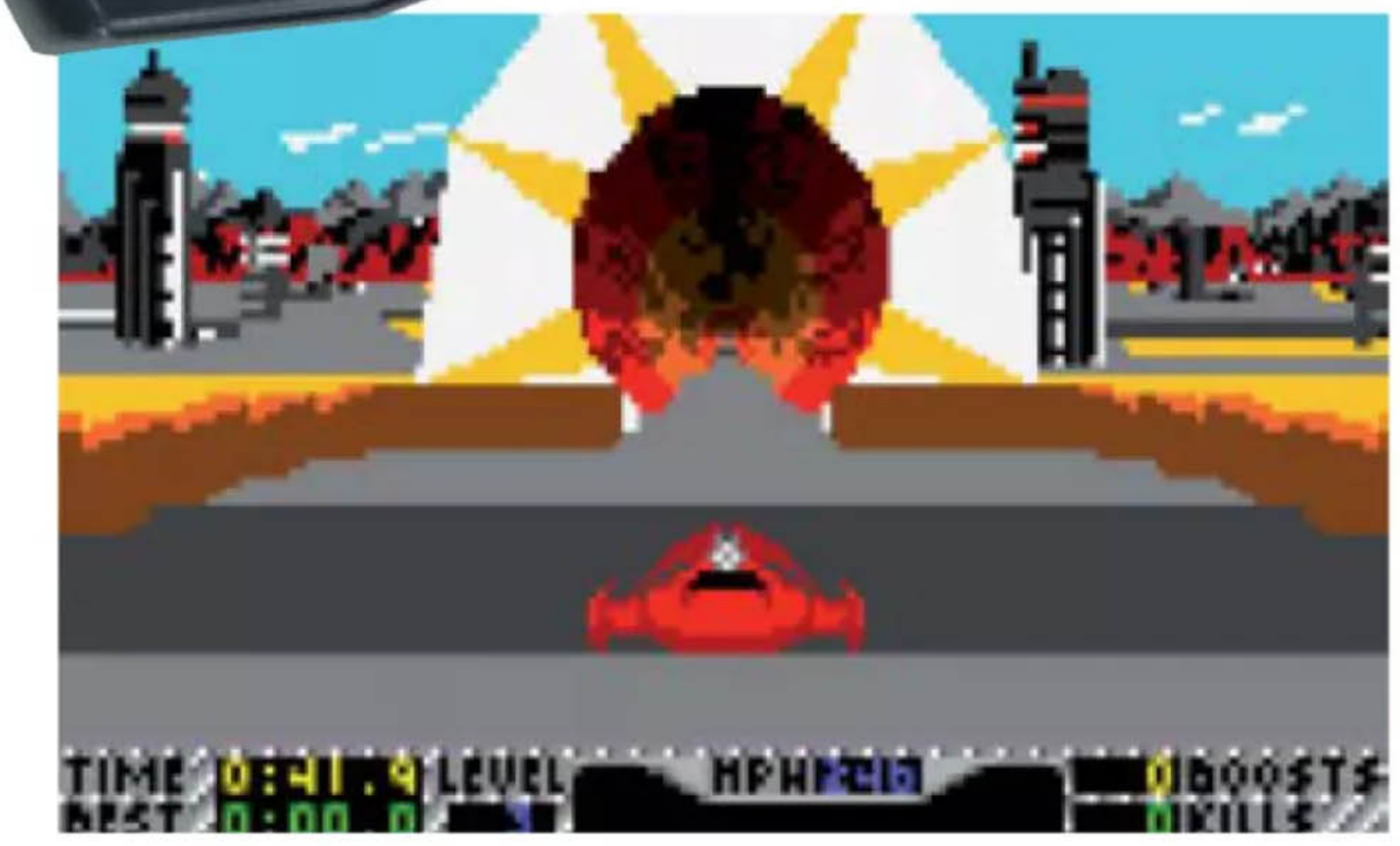
LEMMINGS

» RELEASED: 1993 » PUBLISHED BY: ATARI
» CREATED BY: IN-HOUSE

4 *Lemmings* has appeared on virtually every console and computer that has ever been made, so it should come as no surprise that the loveable mop-tops can also be found on the Atari Lynx. What is surprising, though, is just how good an adaptation of *Lemmings* this actually is. Despite the small screen and lack of a mouse there are no problems with this spot-on conversion. Your little fellas are perfectly animated and full of character, the levels are easy to navigate and it's incredibly easy to select each class. In fact, the only thing that is likely to put fans off is that you're going to be extremely unlikely to find a cheap copy of it.

LYNX
TOTAL SCORE 0002550
LEVEL 003
TIME: 100
CHIPS LEFT: 004
LESSON 3
CODE:ECBQ
ATARI

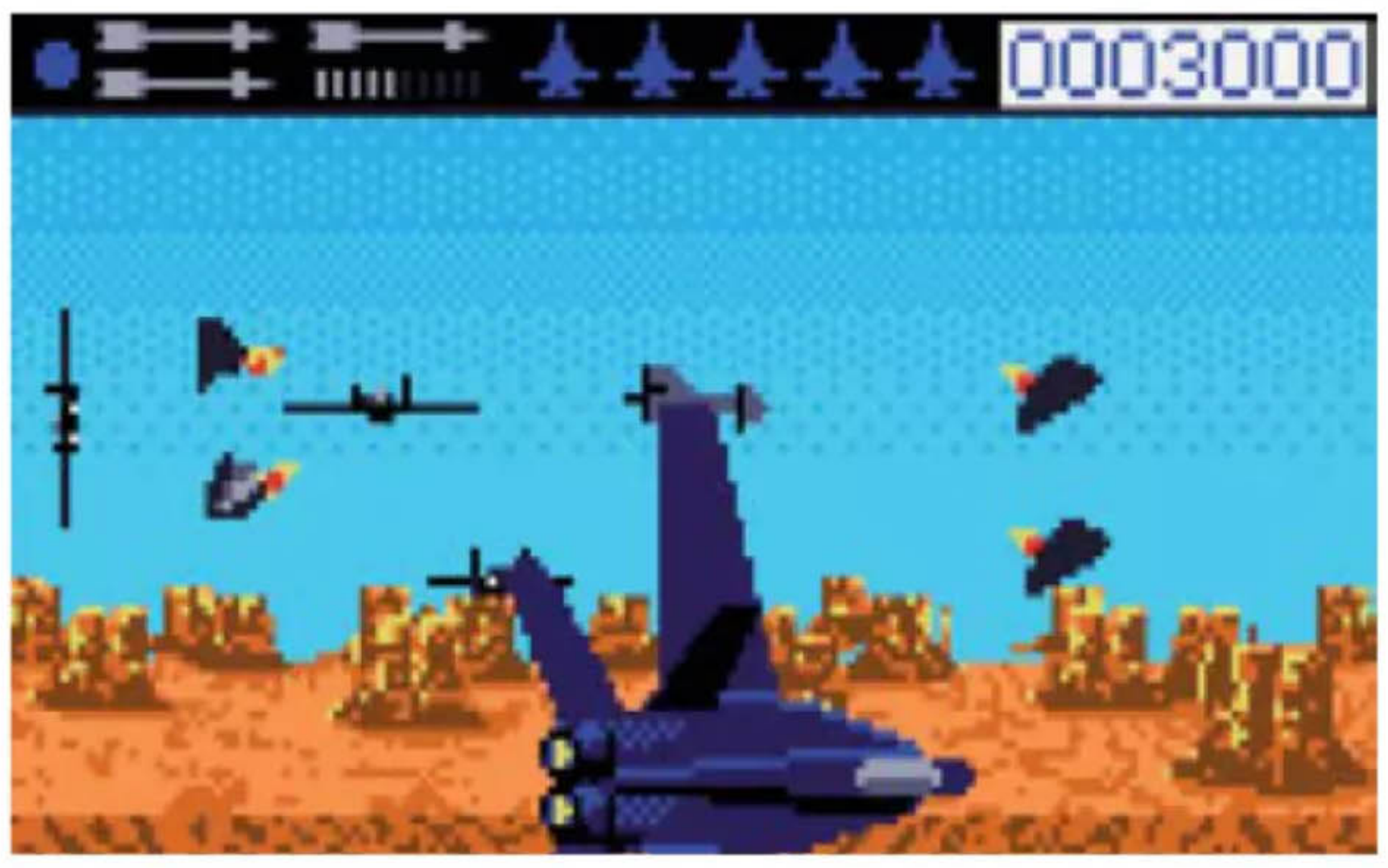
> “ZARLOR MERCENARY DOESN’T DO ANYTHING NEW, BUT WHAT IT DOES DO IS EXCEPTIONALLY POLISHED”
>
> PLAY CHUCK SOMMERVILLE’S GAME NOW



S.T.U.N. RUNNER

» RELEASED: 1991 » PUBLISHED BY: ATARI
» CREATED BY: D. SCOTT WILLIAMSON

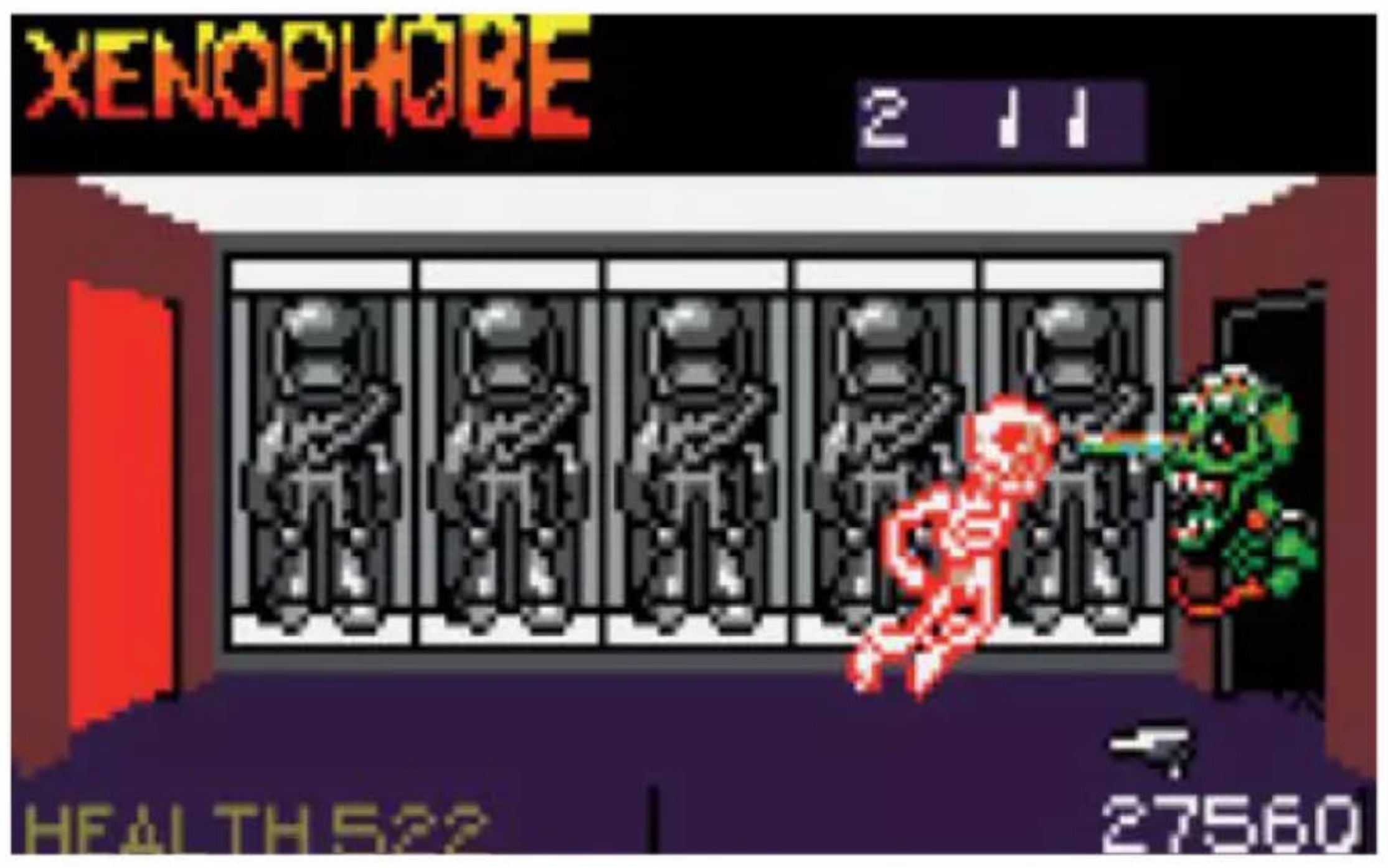
5 If anyone doubts the power of Atari’s Lynx, simply shove a copy of *S.T.U.N. Runner* under their noses and watch them go into serious denial (we’ve tried it and it’s fun). While it obviously can’t hope to match the insane slickness and plentiful polygons of the arcade original (we still have dreams about that sleek, sexy cab), this Lynx conversion is amazingly polished and perfectly captures the atmosphere of its larger peer. Granted it’s far more unforgiving than its bigger brother – you’ll find the controls a little sensitive to begin with – and the gameplay is rather simplistic, but *S.T.U.N. Runner* remains a thrilling racer for Atari’s handheld.



BLUE LIGHTNING

» RELEASED: 1989 » PUBLISHED BY: EPYX
» CREATED BY: STEPHEN LANDRUM

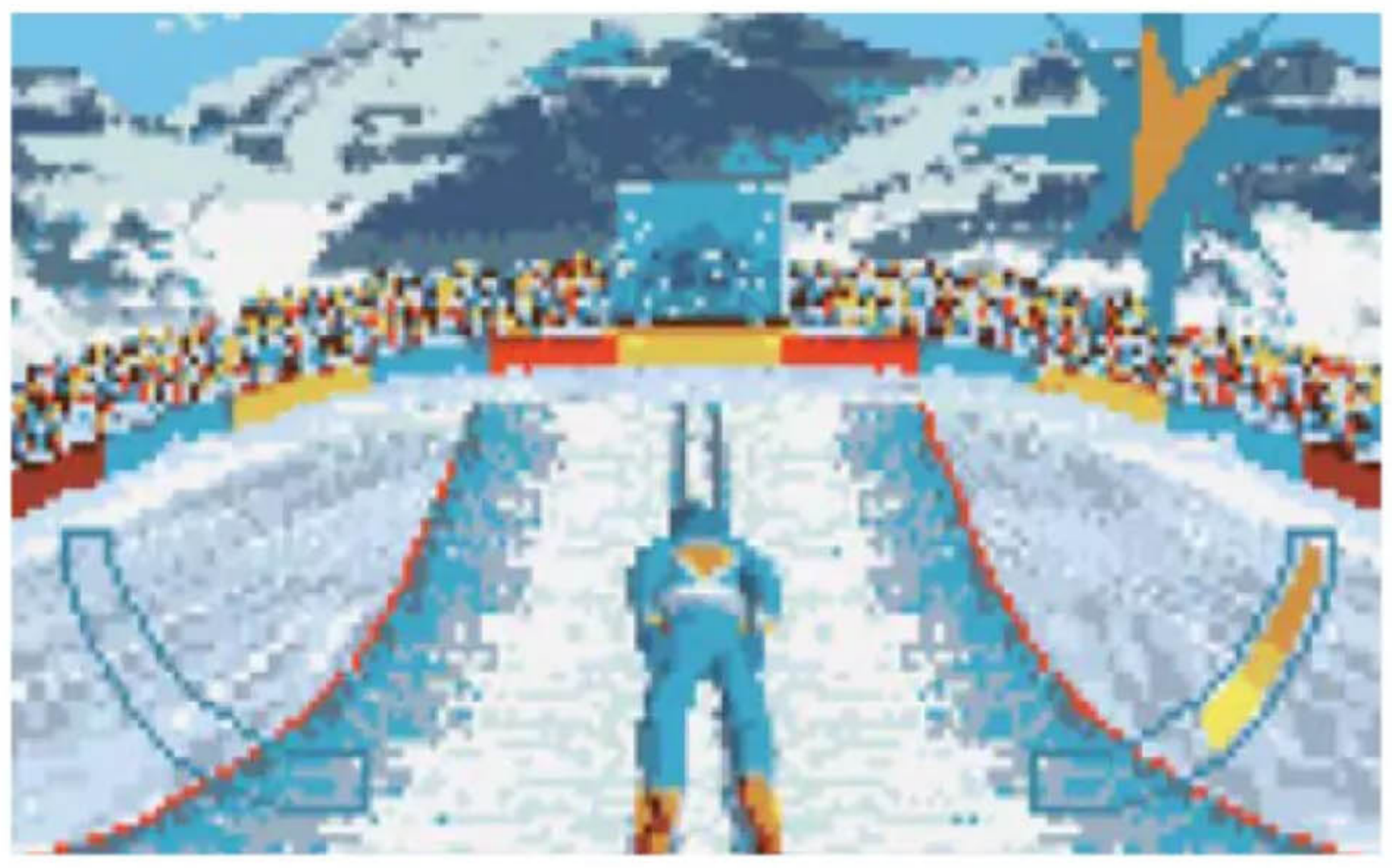
6 *Blue Lightning* may well have been one of the earliest titles to show off the Lynx’s graphical grunt, but that’s not to say it wasn’t a superb game in its own right. Essentially Atari’s answer to *After Burner* and *Star Fox*, *Blue Lightning* put you at the stick of an advanced military jet and required you to shoot down wave upon wave upon wave of enemy fighters. Sure it gets repetitive, but the action is always fast and frantic, the nine levels have a variety of nice environments to fly through and the scaling effects are truly fantastic. If you’re looking for a good blaster then set your sights on *Blue Lightning*. It’s far better than our rather naff pun.



XENOPHOBE

» RELEASED: 1992 » PUBLISHED BY: ATARI
» CREATED BY: GIL COLGATE

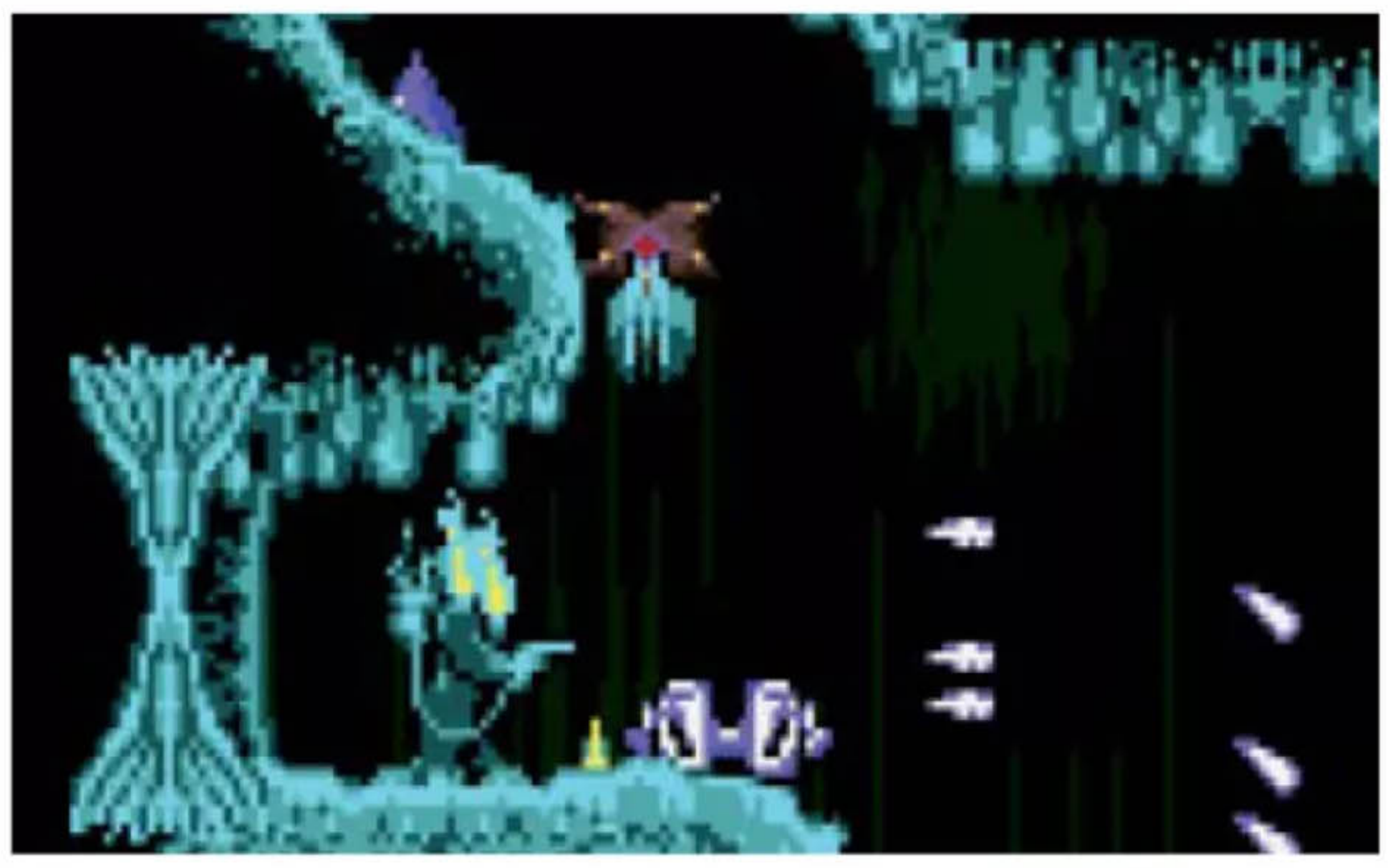
7 While the Lynx had many fine conversions, it was only really *Xenophobe* that managed to notably improve on its arcade original. For starters, the controls were streamlined and far easier to use (the arcade’s three-button joystick was quite cumbersome), new items like the jetpack enabled you to fly around the space station without taking damage, while several new multiplayer modes kept the gameplay fresh and exciting. Add in some cartoony visuals that perfectly mimicked their arcade parent’s and the end result is a highly enjoyable multiplayer experience that proves hunting down aliens can actually be a lot of fun.



ALPINE GAMES

» RELEASED: 2004 » PUBLISHED BY: DURANIK
» CREATED BY: ROLAND GRAF, JOHANNES GRAF

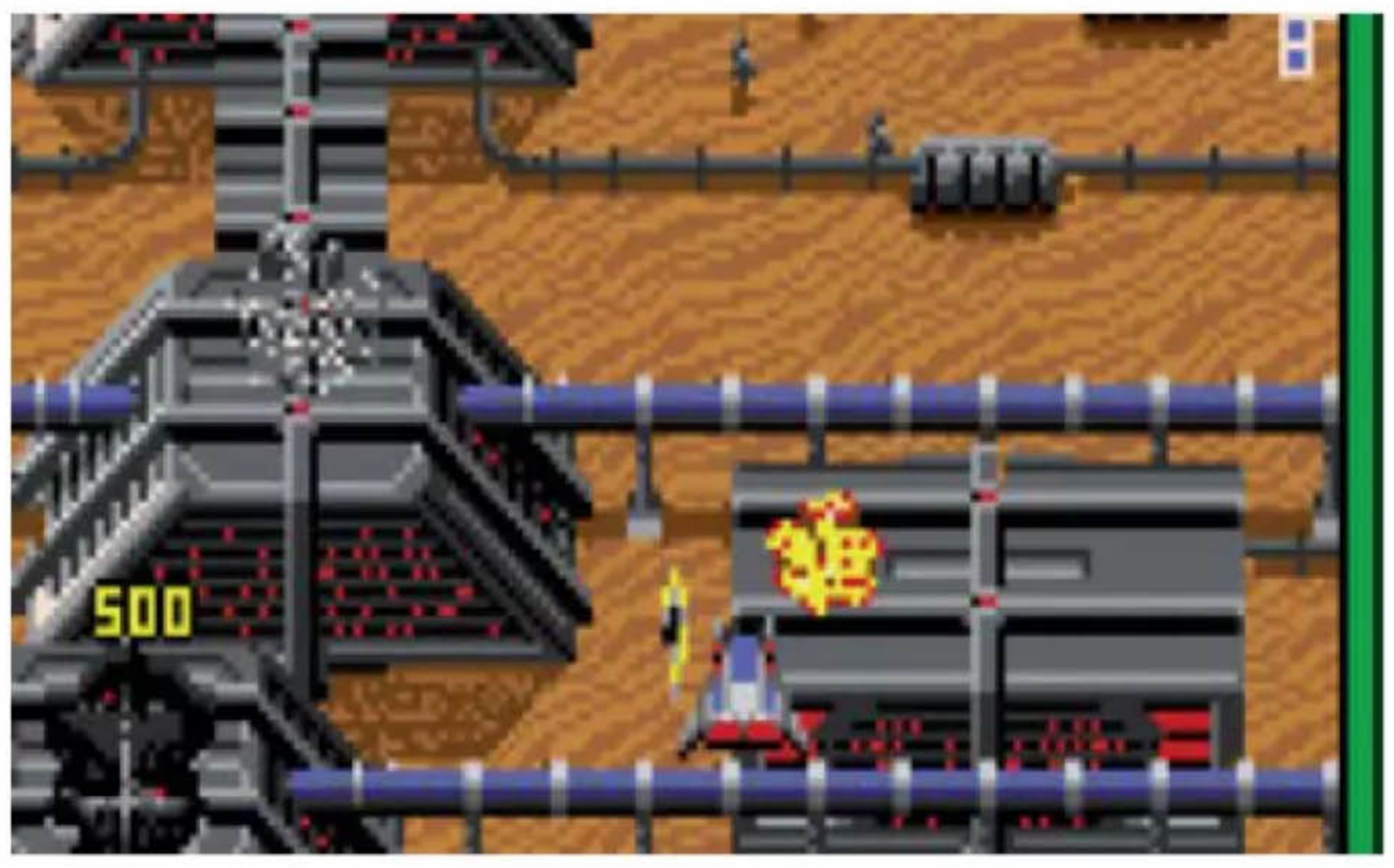
8 Normally we wouldn’t cover a homebrew title in our perfect ten for fear of upsetting people, but *Alpine Games* is so brilliant that it would have been criminal not to include it. Essentially a homage to Epyx’s sports games of old (why only *California Games* was released on the Lynx is beyond us), *Alpine Games* ups the ante considerably by featuring nine different events, nifty digitised music and some astounding-looking visuals that push the Lynx further than we’ve ever seen. The bobsleigh, in particular, looks absolutely amazing, but it’s the finely balanced gameplay that really manages to impress. It’s pricey, but certainly worth it.



TODDS ADVENTURES IN SLIME WORLD

» RELEASED: 1992 » PUBLISHED BY: EPYX
» CREATED BY: PETER ENGELBRITE

9 We were going to go with Bill And Ted, but we decided that *Todd’s Adventures* is slightly better (it was a really close call, though). Anyway, *Slime World* sees you thrown into a series of caverns in search of precious Slime Gems. Sadly for Todd, Slime World is literally covered in gross icky enemies, so you’ll need to constantly keep his water gun filled up so you can clean up the pulsating planet. Like many Lynx titles, *Slime World* is very pretty and the slime-coated caverns that Todd explores are constantly in motion. An excellent *Metroid* clone with lots to do.



ZARLOR MERCENARY

» RELEASED: 1990 » PUBLISHED BY: EPYX
» CREATED BY: CHUCK SOMMERVILLE

10 With *Robotron: 2084* just missing out due to its overly complex control system, *Zarlor Mercenary* quickly swoops in and deservedly steals the last position in our prestigious top ten. Set across six huge and incredibly varied levels, *Zarlor Mercenary* doesn’t do anything astoundingly new, but what it does do is exceptionally well polished. Destroyed enemies release coins that can then be spent on power-ups, there are some genuinely tough bosses to topple and the pseudo-3D visuals used throughout the game are very effective. There’s even a superb multiplayer option that enables you to team up with three other pilots.

ATARI LYNX
AND THE REST…

So what if it was steam rollered by Nintendo? There were still some choice (and not so choice) games available for Atari's gigantic handheld. Just check out the following two pages if you don't believe us

1 BatMan Begins
2 Pinball Jam
3 Viking Child
4 Todd's Adventures in Slime World
5 Ninja Gaiden III: Ancient Ship of Doom
6 Chip's Challenge
7 Gordo 106
8 BattleWheels
9 Desert Strike: Return to the gulf
10 Rampart
11 Warbirds
12 Fat Bobby
13 Checkered Flag
14 Steel Talons
15 Lynx Casino
16 Battlezone 2000
17 Dracula the Undead
18 Hard Drivin'
19 Blue Lightning
20 Electrocop
21 Pac-Land
22 xybots
23 awesome golf
24 bubble trouble
25 jimmy connors' tennis
26 kung food
27 scrapyard dog
28 Power factor
29 world class fussball
30 alpine games
31 crystal mines II
32 Ishido: The way of stones
33 Robo-Squash
34 Double Dragon
35 MS Pac-Man
36 california games
37 hydra
38 lemmings
39 super off-road
40 tournament cyberball 2072
41 xenophobe
42 A.P.B.
43 Dirty Larry: renegade cop
44 joust
45 shadow of the beast
46 ninja gaiden
47 basketbrawl
48 paperboy
49 robotron: 2084
50 shanghai
51 zarlor mercenary
52 rampage
53 blockout
54 Pit-Fighter
55 roadblasters
56 switchblade II

LYNX
54
8200
08

POLICE FORCE
TAKE THE HIGHEST SCORE
PRESS B FOR HARD GAME
02

SCORE 000000
GOLD 0000
HI 010000
03

GUNS:1178
HYDRAS:38
HELLFIRES:8
FUEL 100
ARMOUR 600
LOAD 0
LIVES 3
A MAP
B MISSION
2 STATUS
09

10

15

SHIELD
FUEL
AMMO
SCORE
16

when she had learned he was to visit DRACULA. Last
17

22

AMERICAN COURSE
PRESS A TO VISIT CLUB HOUSE
23

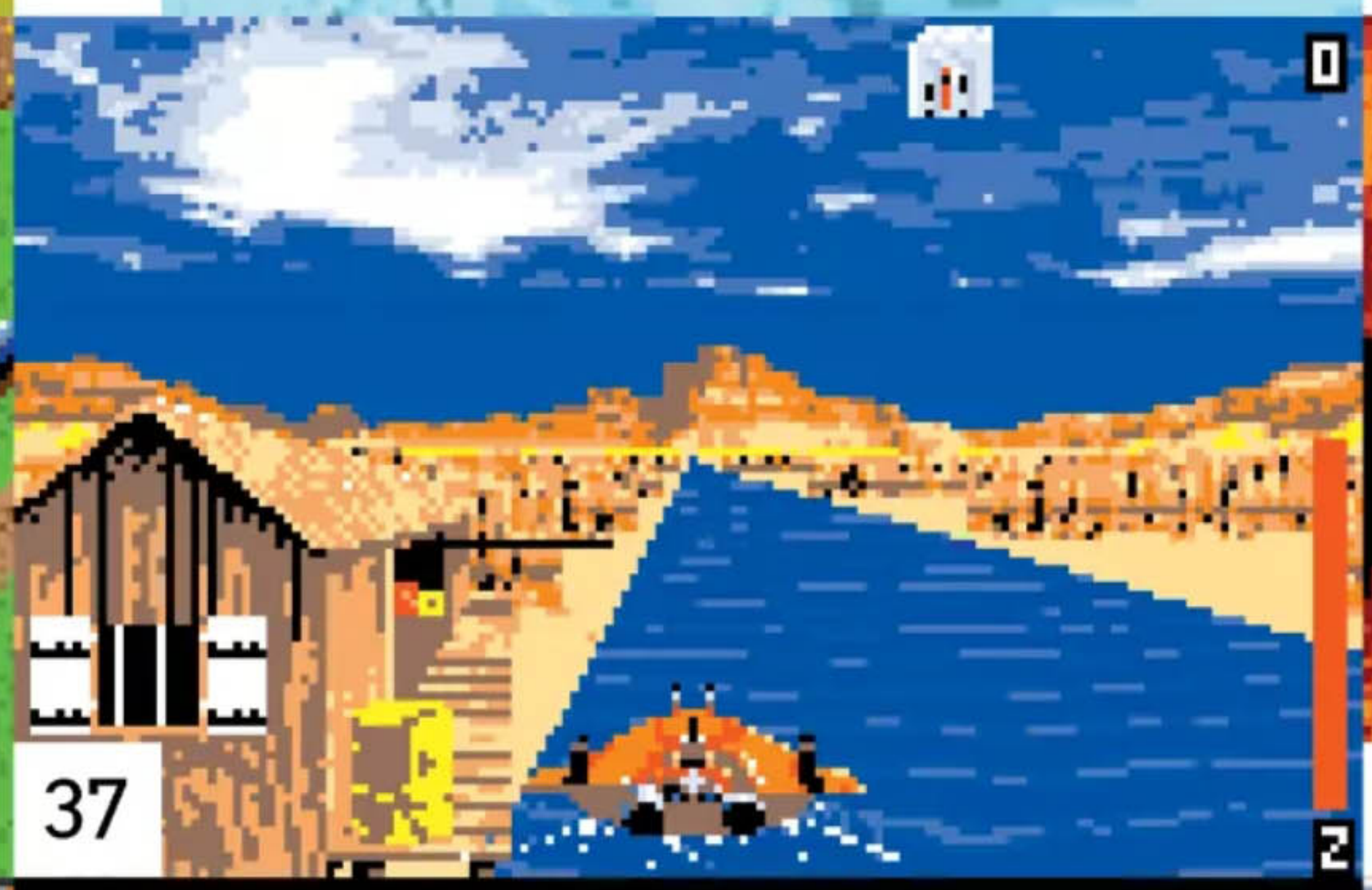
24

29

30

31

36


37

38

PIZZ
YOUR AD HERE!
43

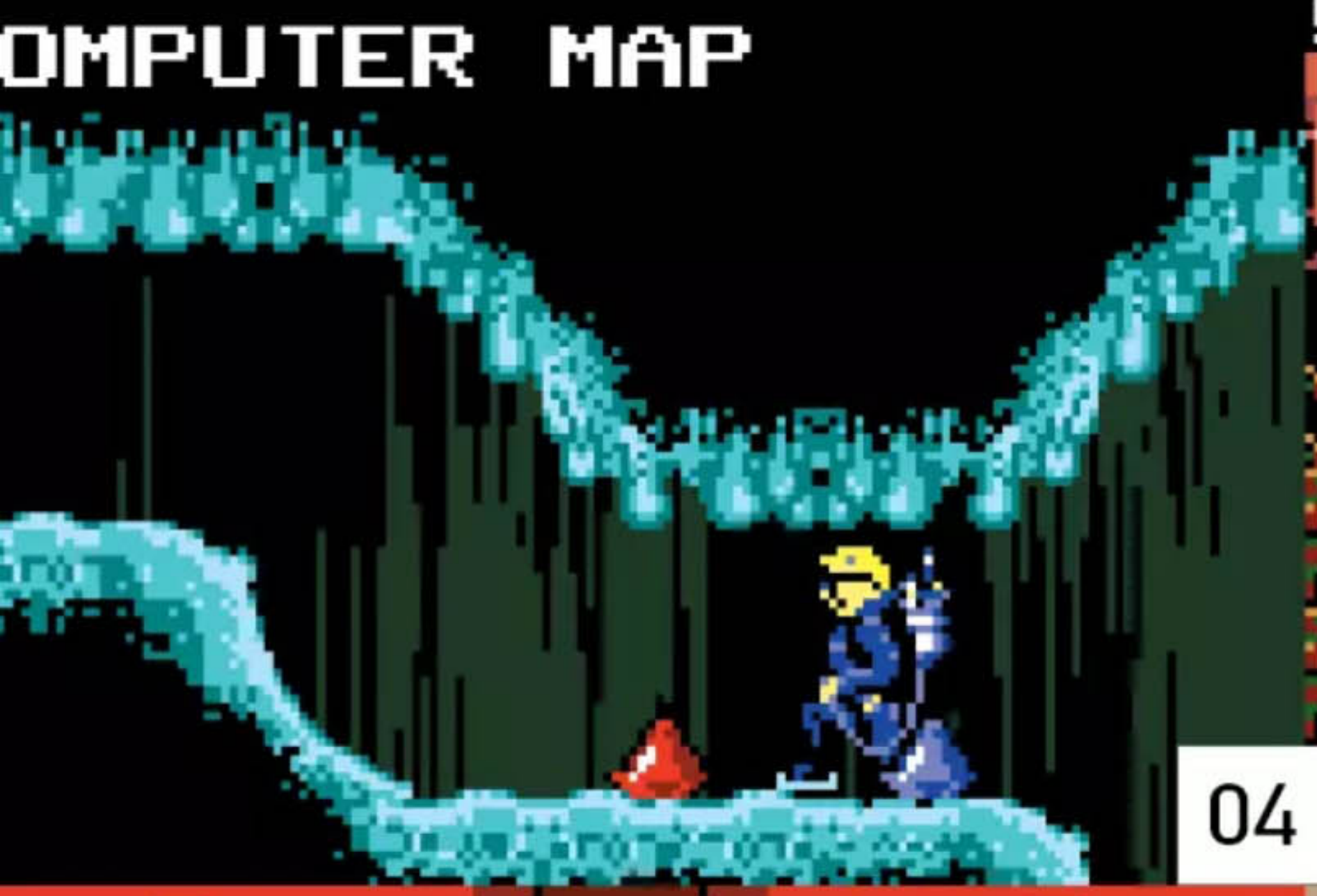
44

45

144 TILES
TIME 00:02
50

51

52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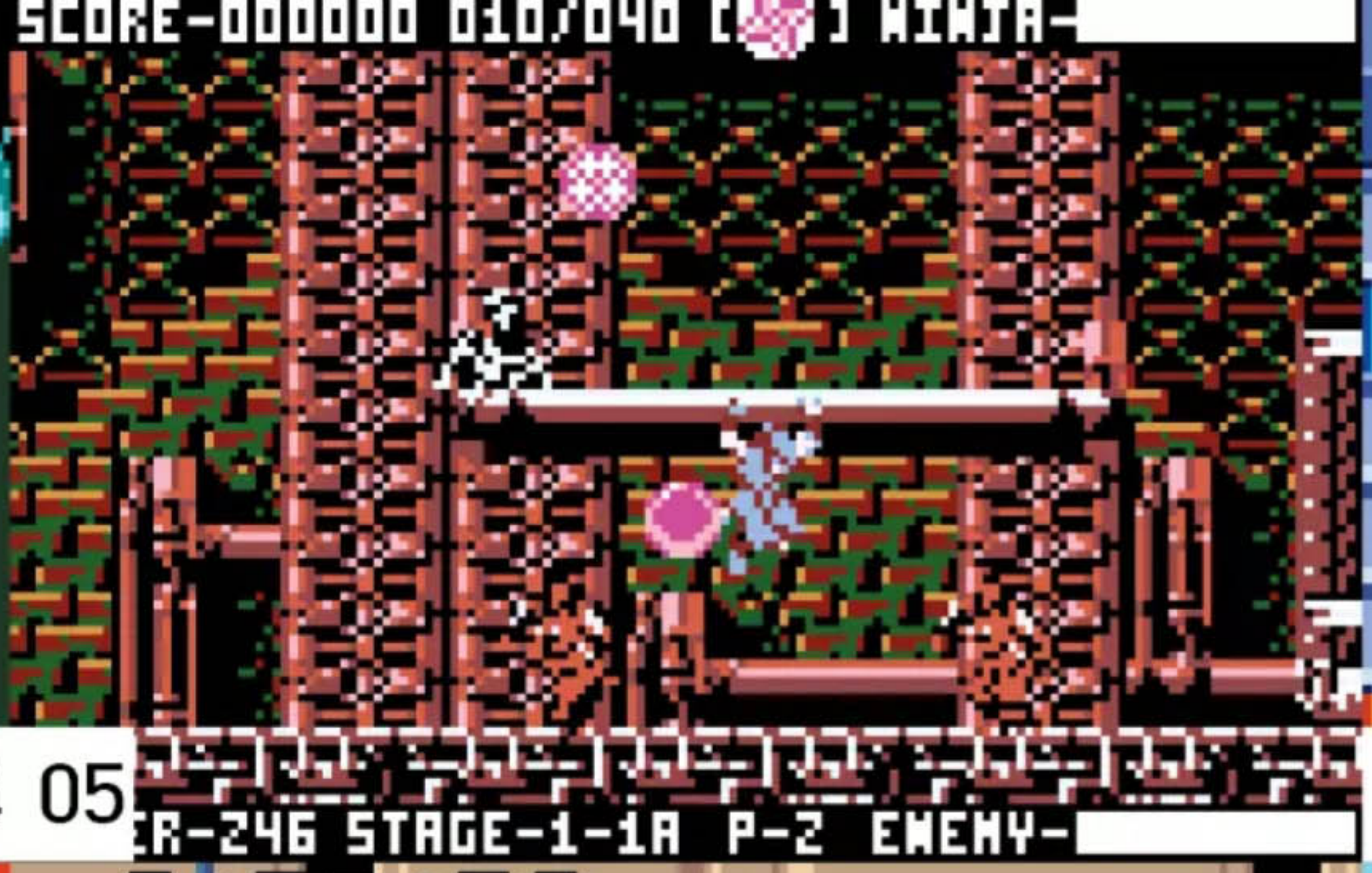
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NINJA-
R-246 STAGE-1-1A P-2 ENEMY-

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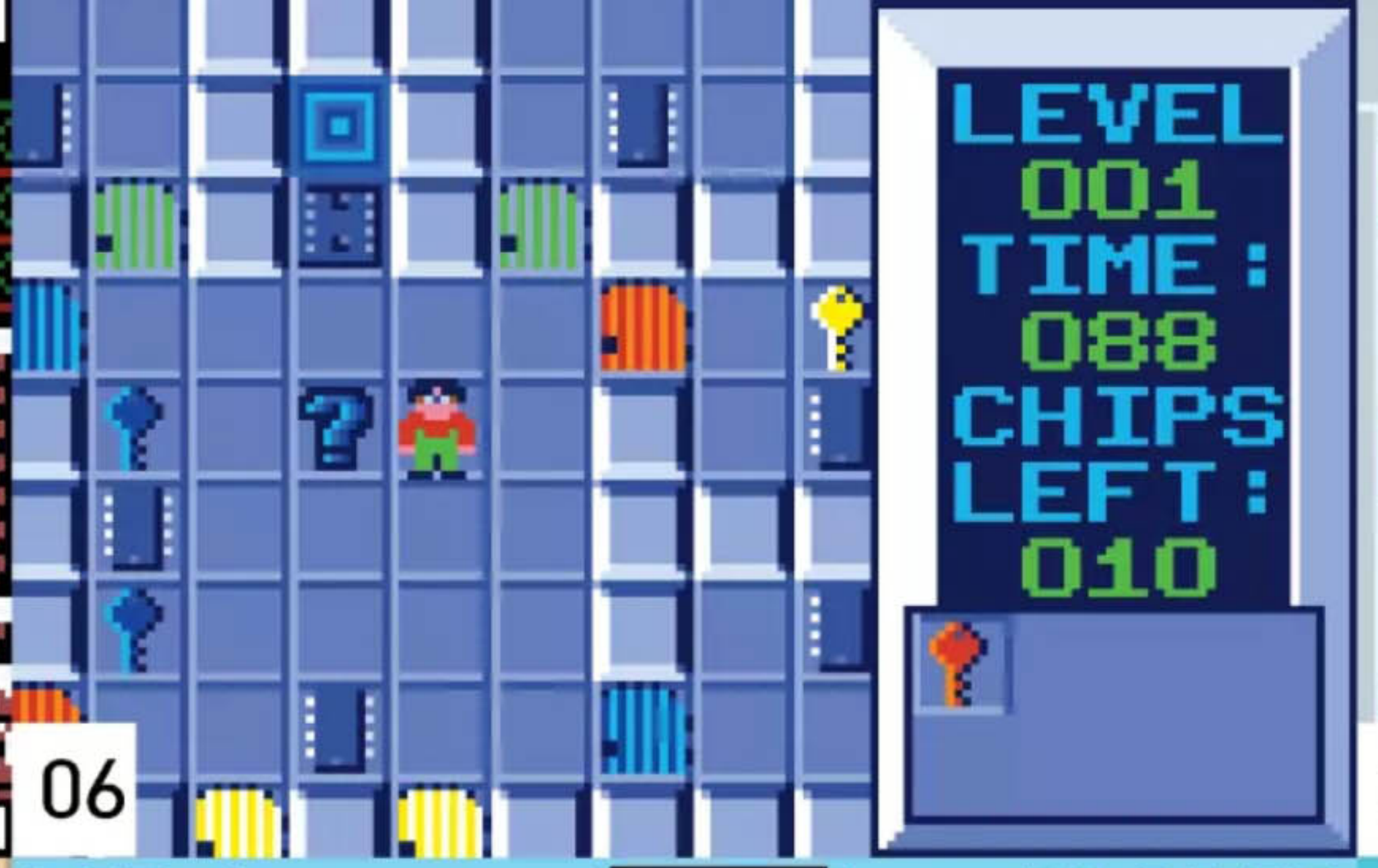
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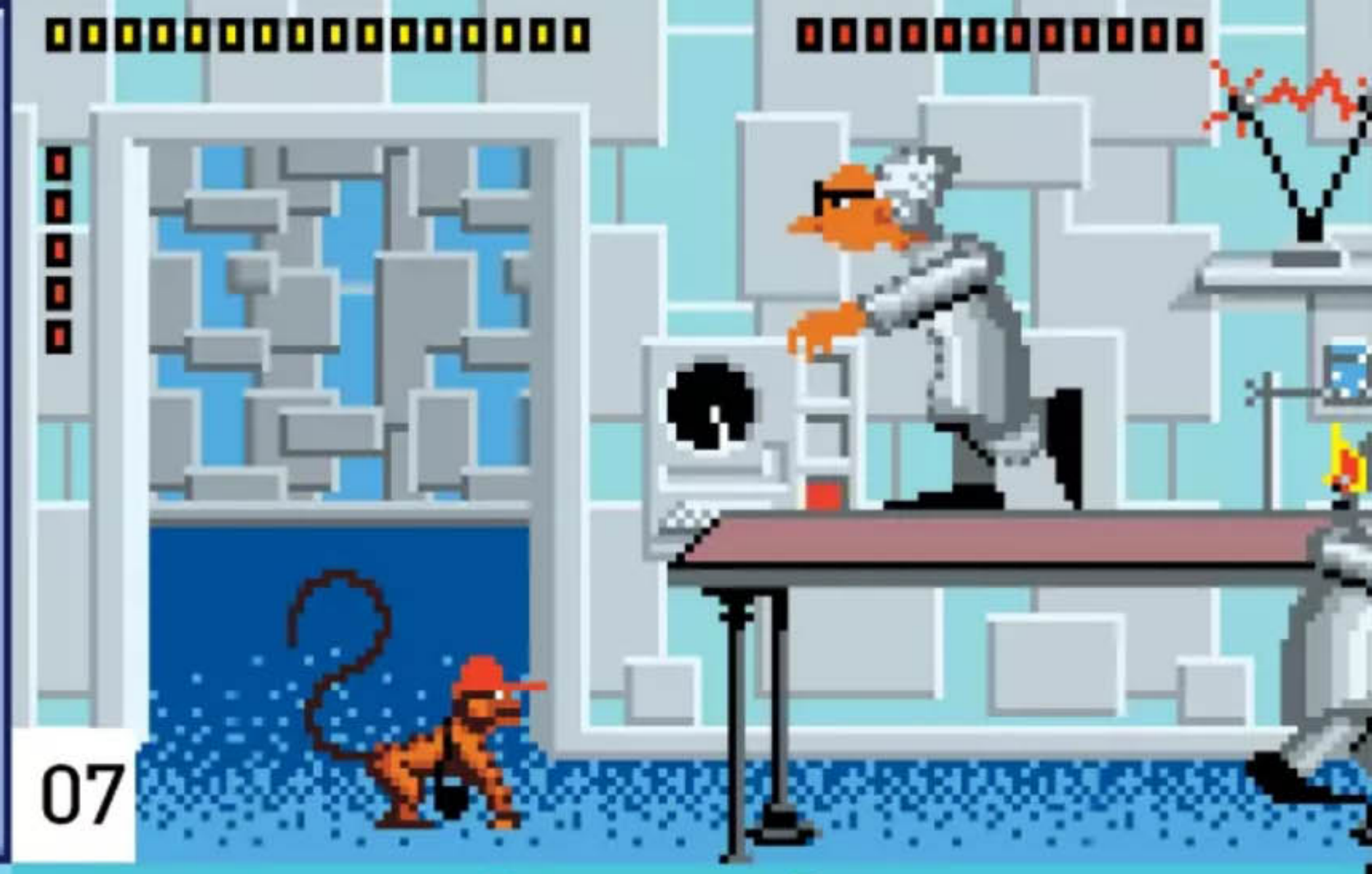
001
TIME:
088
CHIPS
LEFT:
010

06



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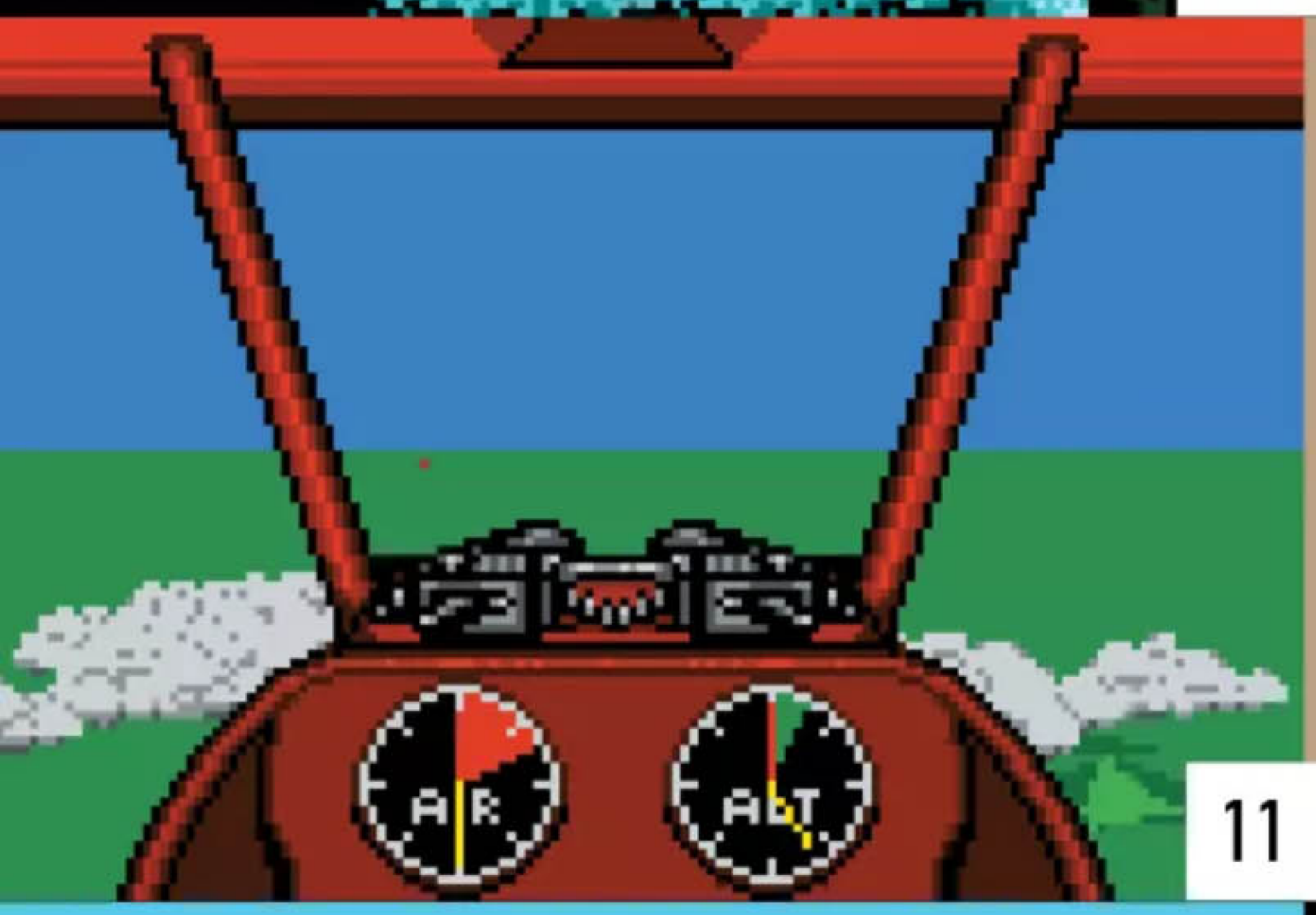

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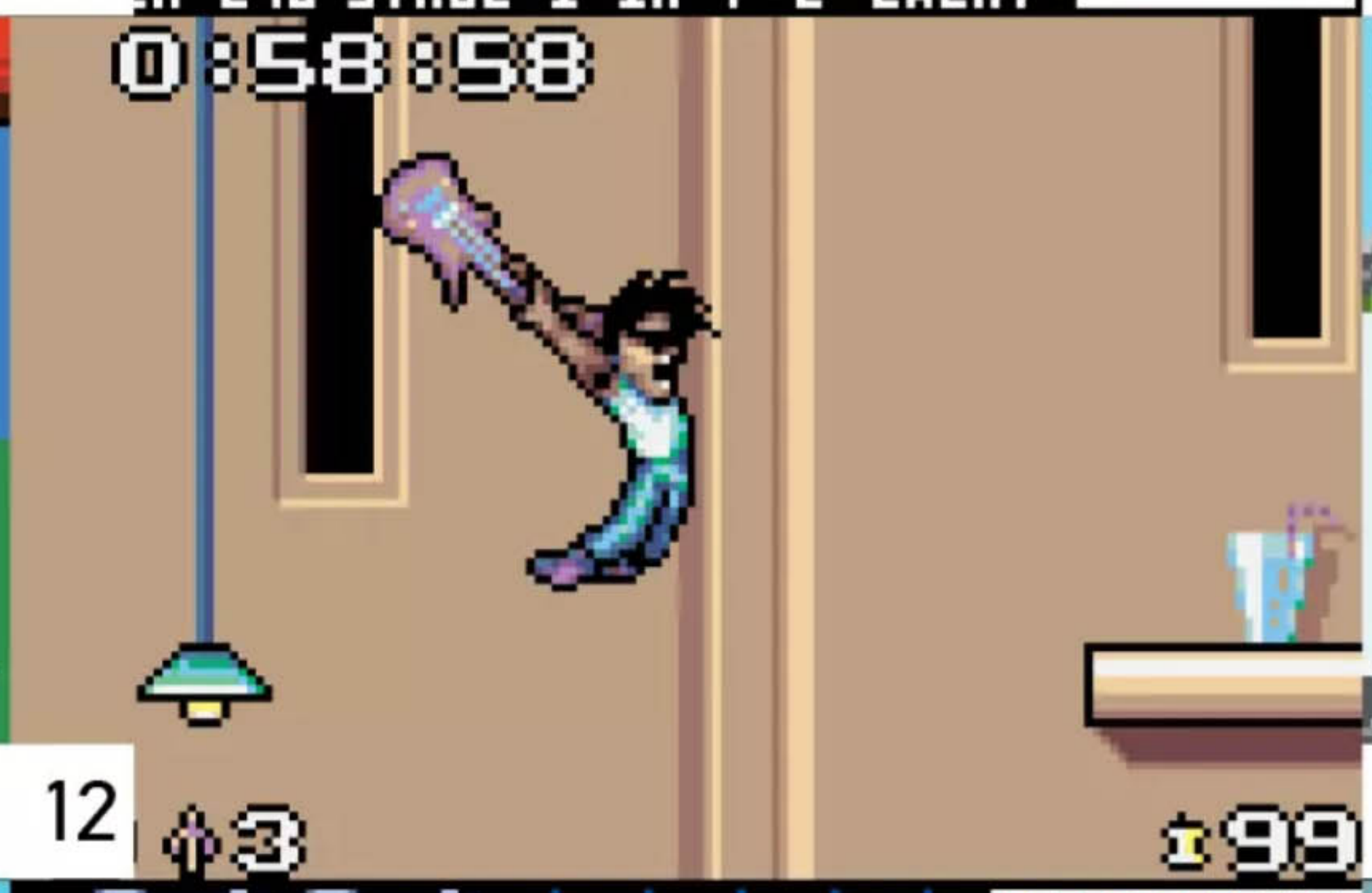

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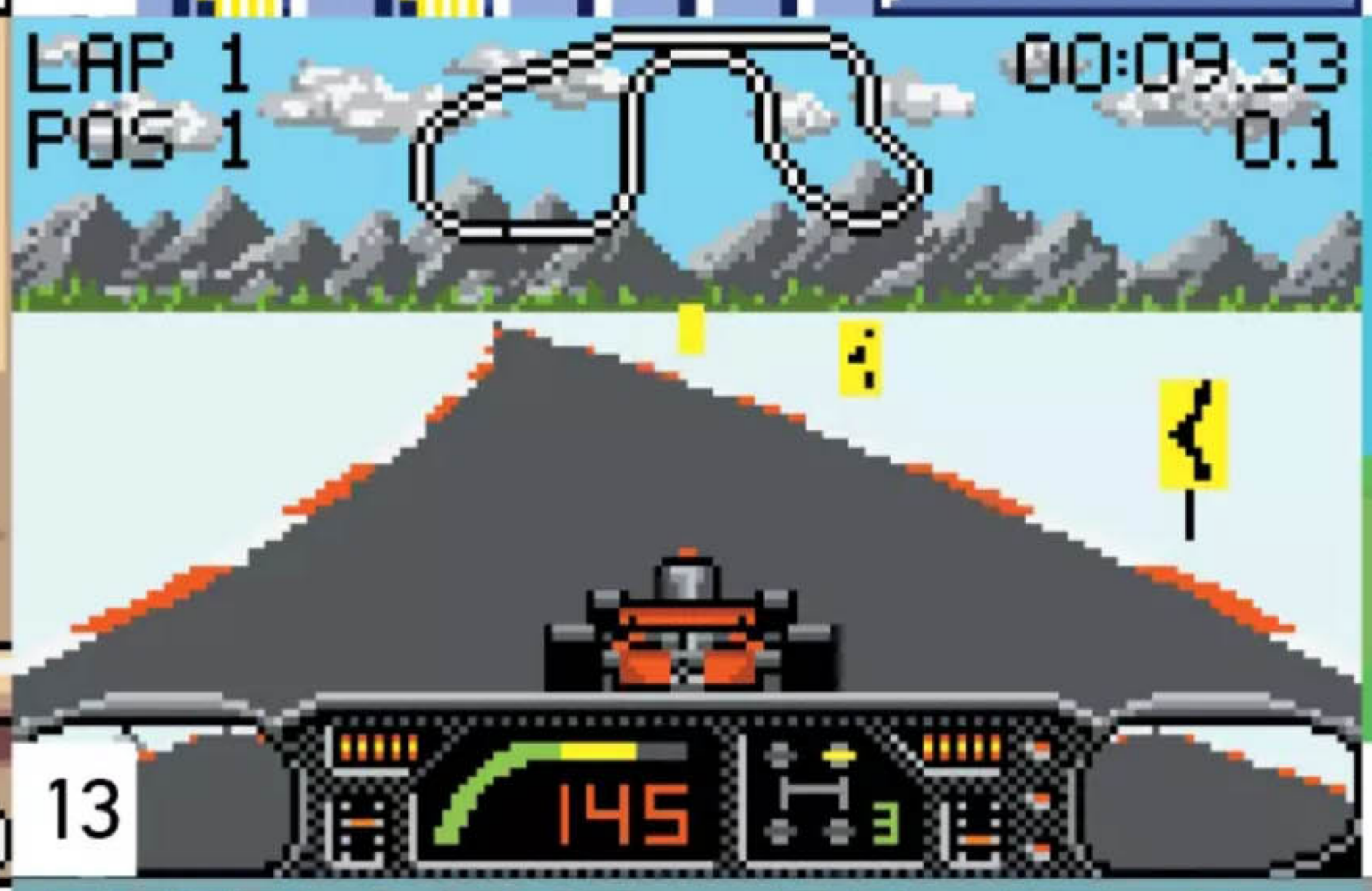
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0.1
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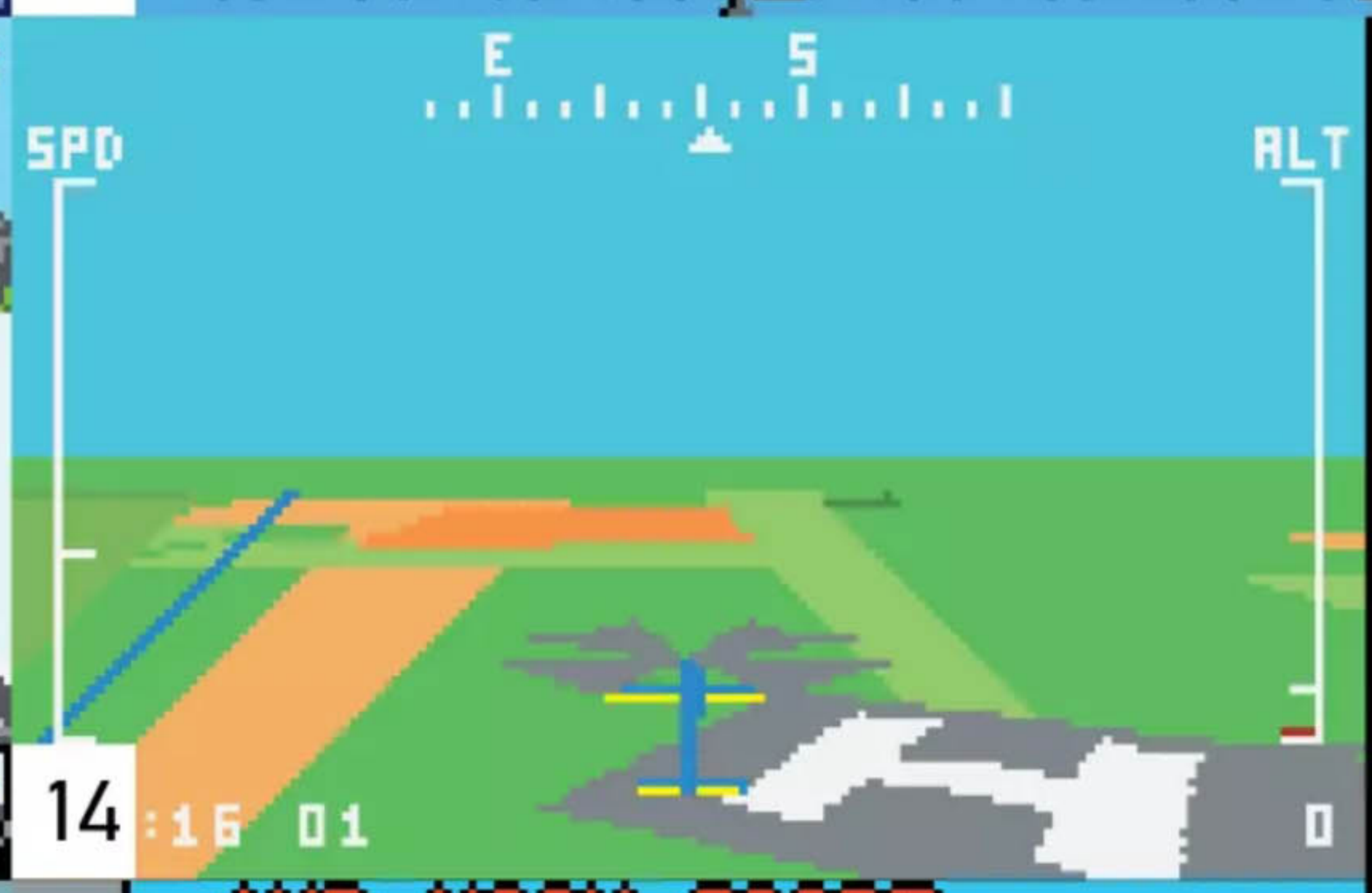
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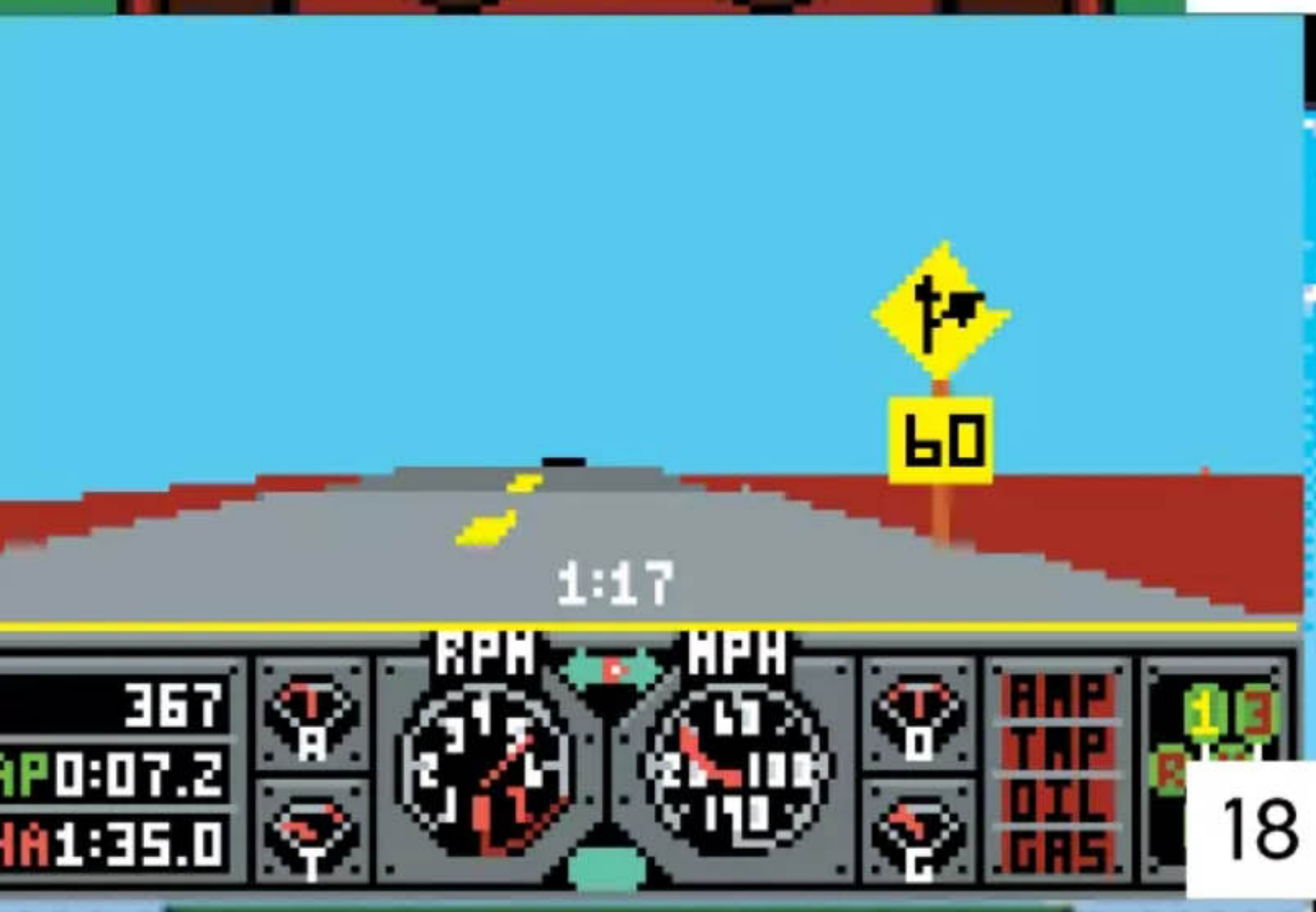
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RPM
MPH
AP0:07.2
HI1:35.0

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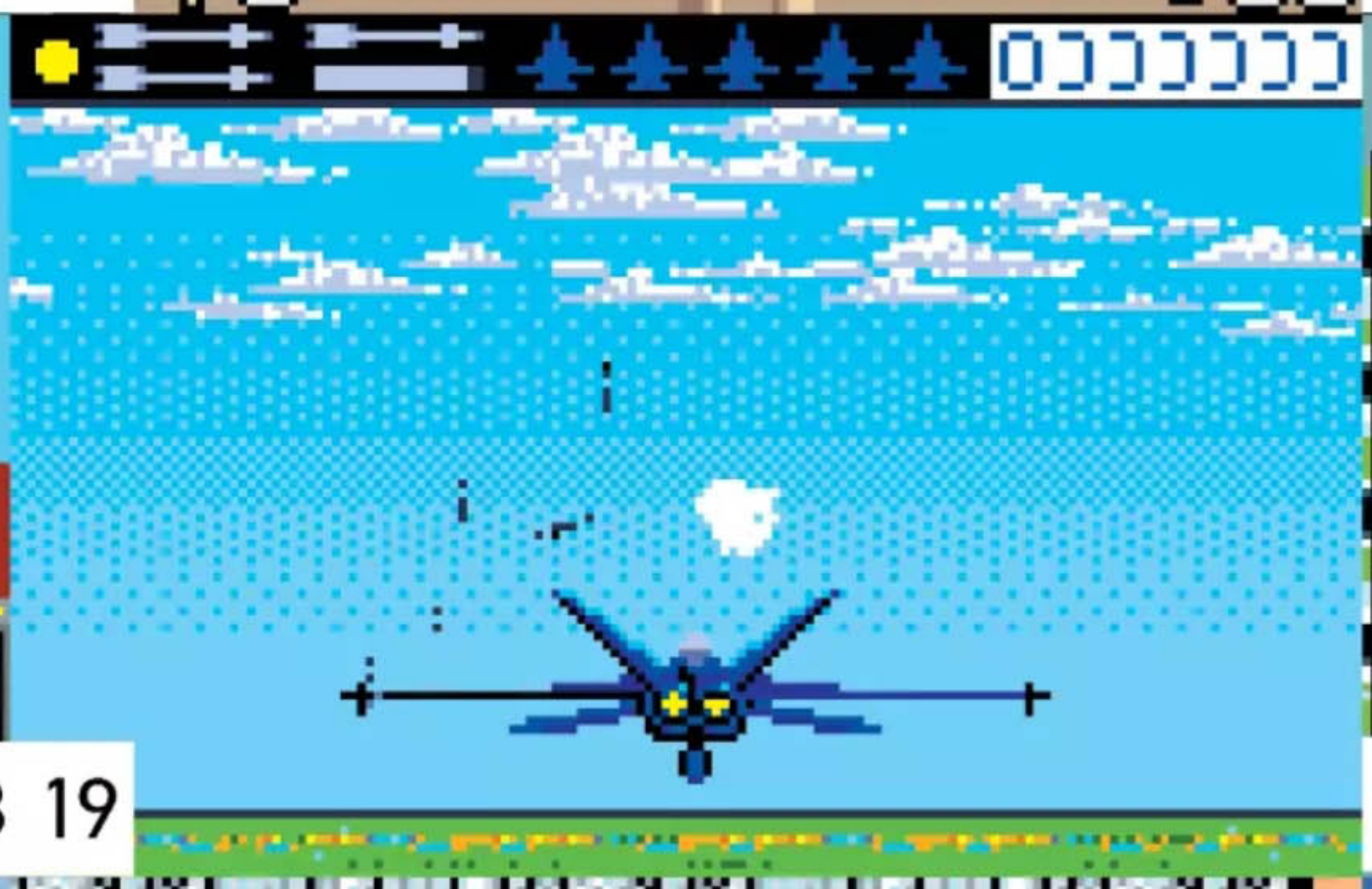

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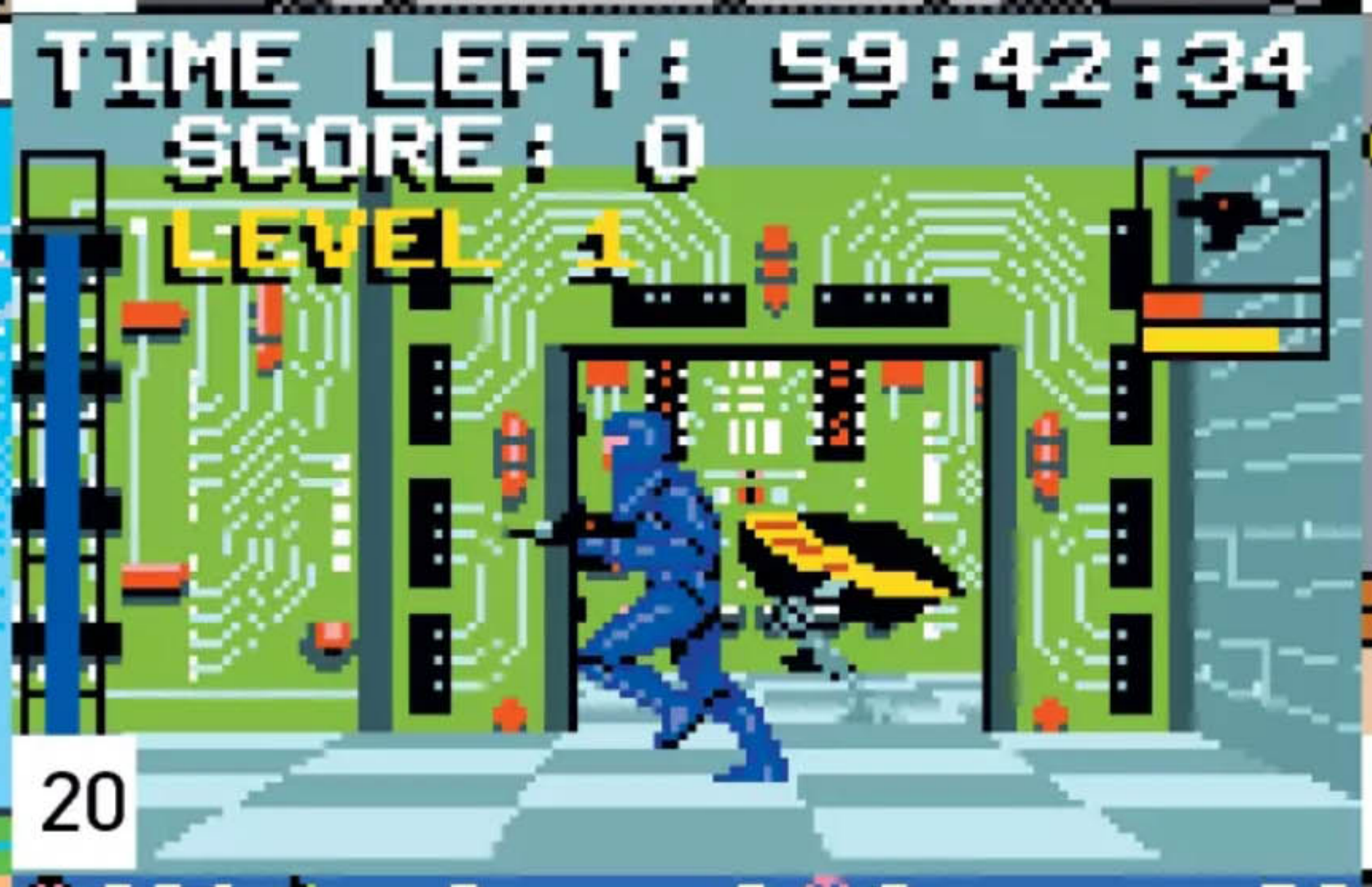
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SCORE: 0
LEVEL 1

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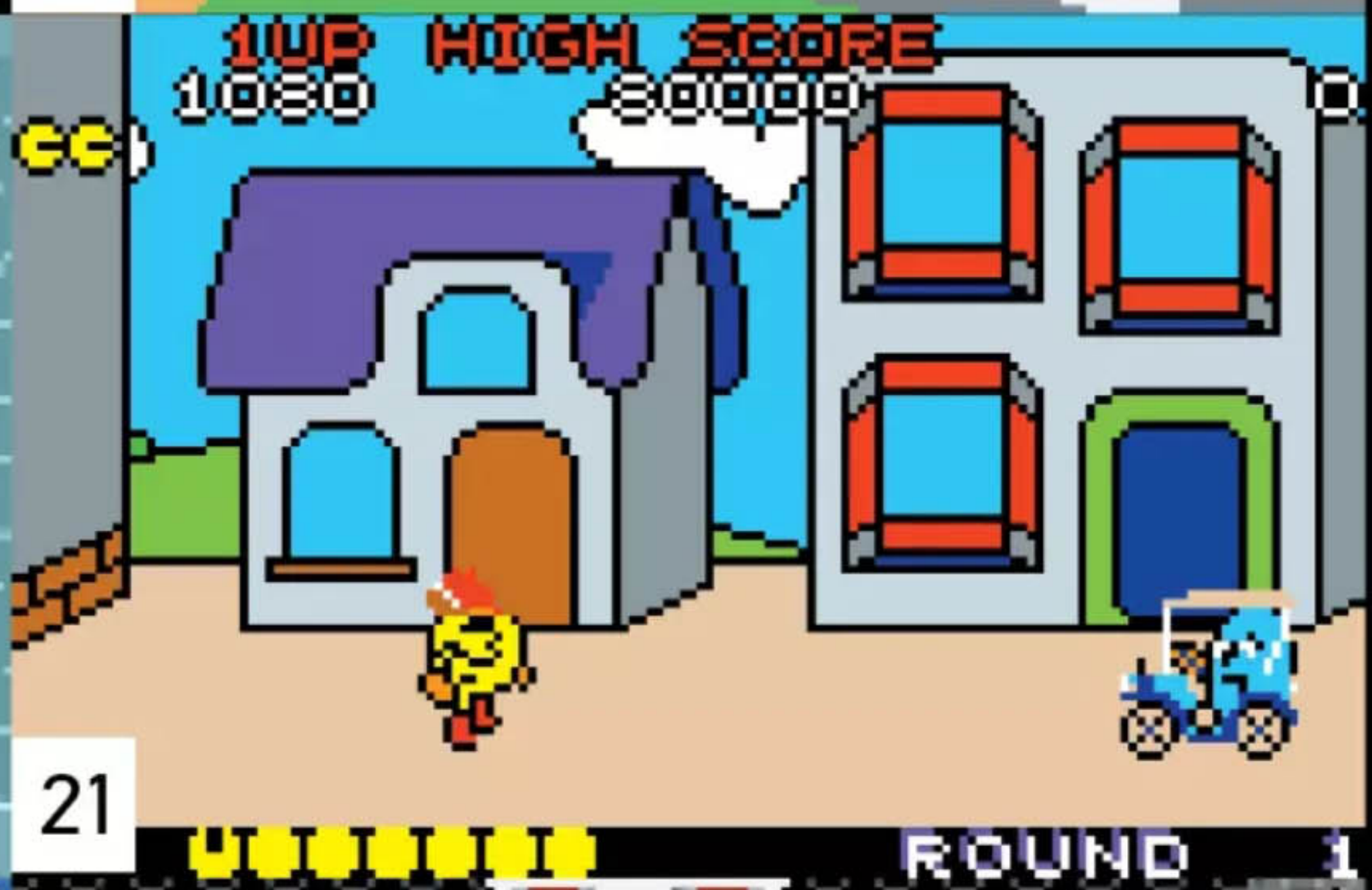
1UP HIGH SCORE
1080 30000

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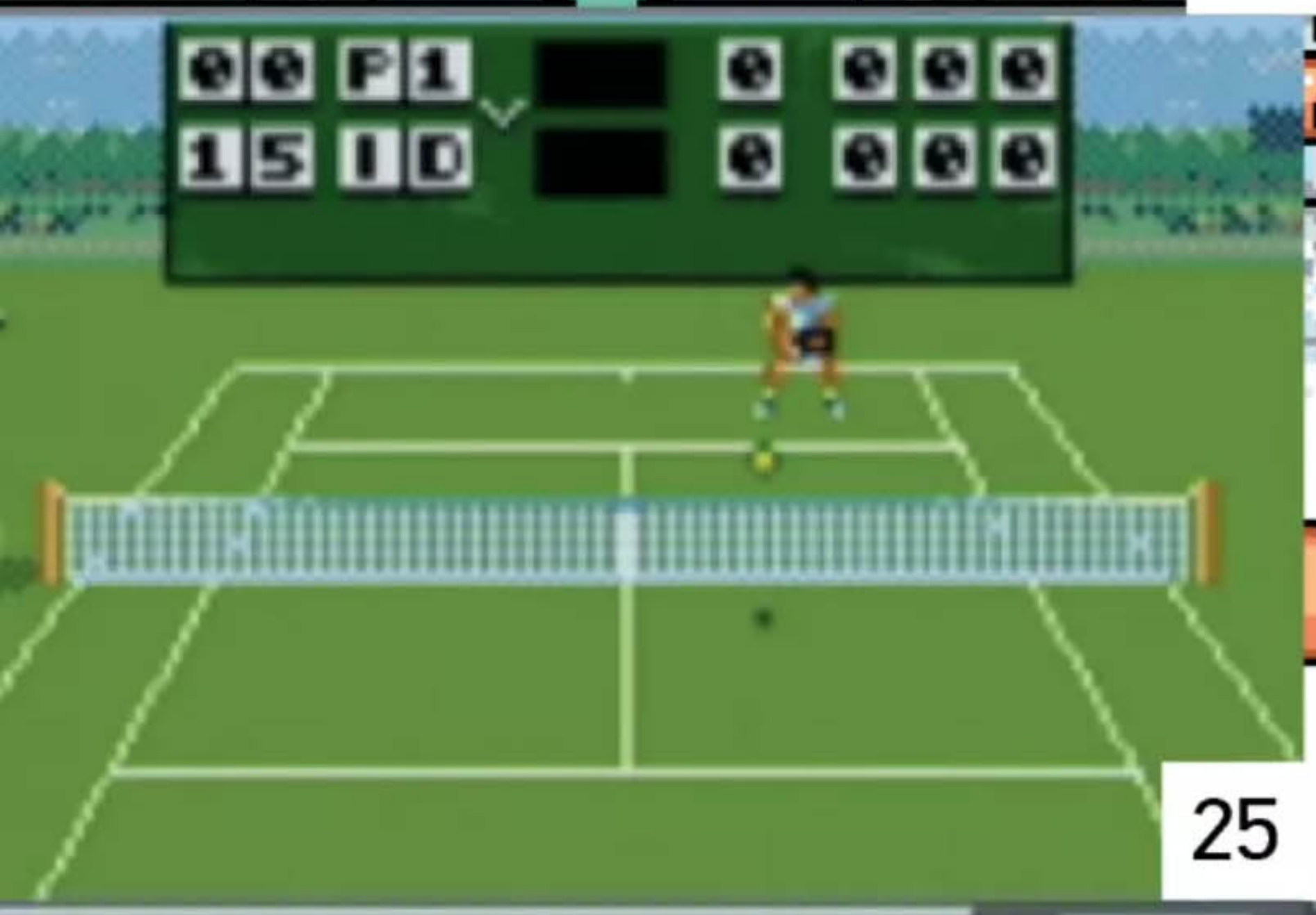

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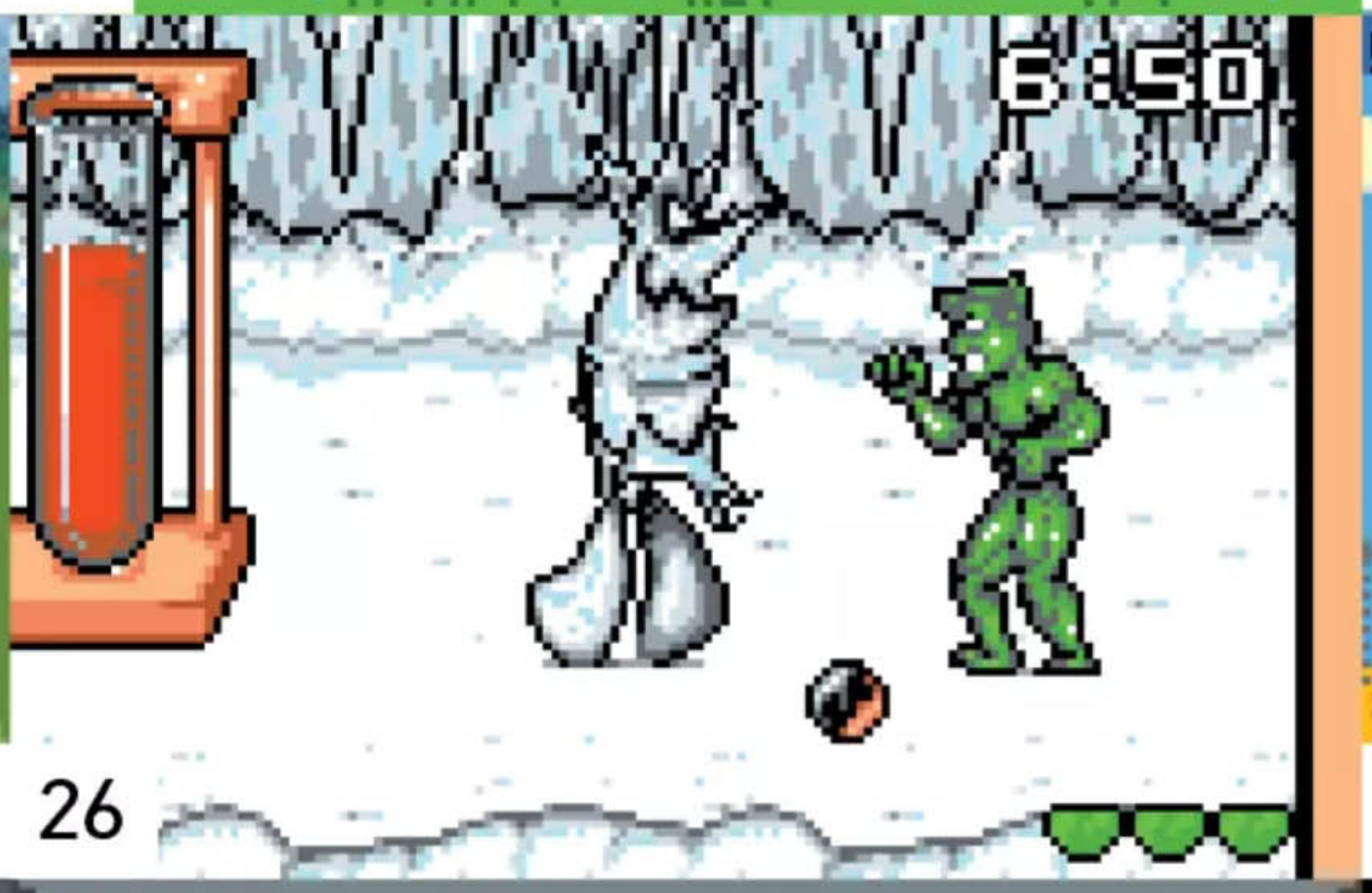

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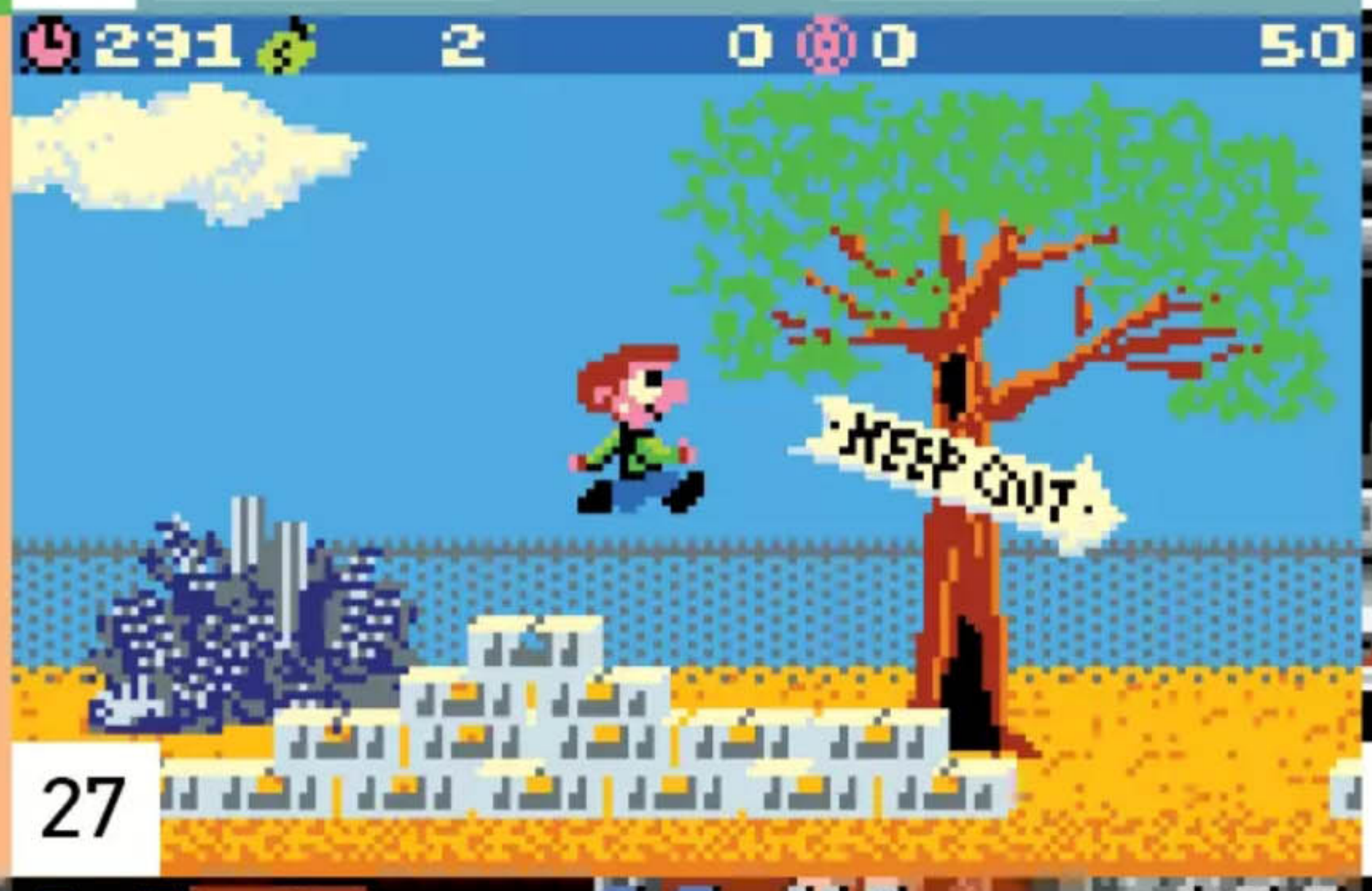
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KEEP OUT

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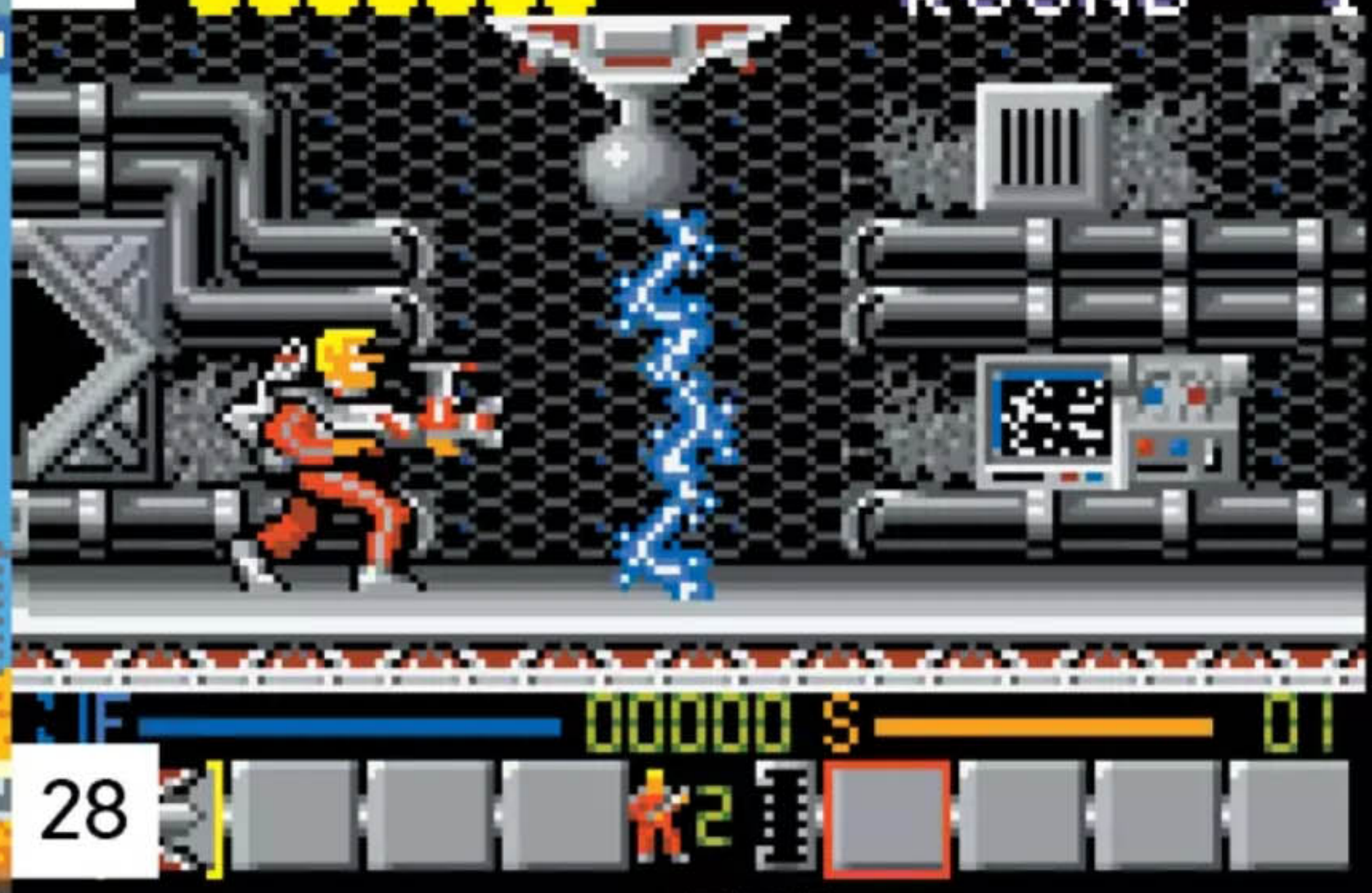
ROUND 1
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01

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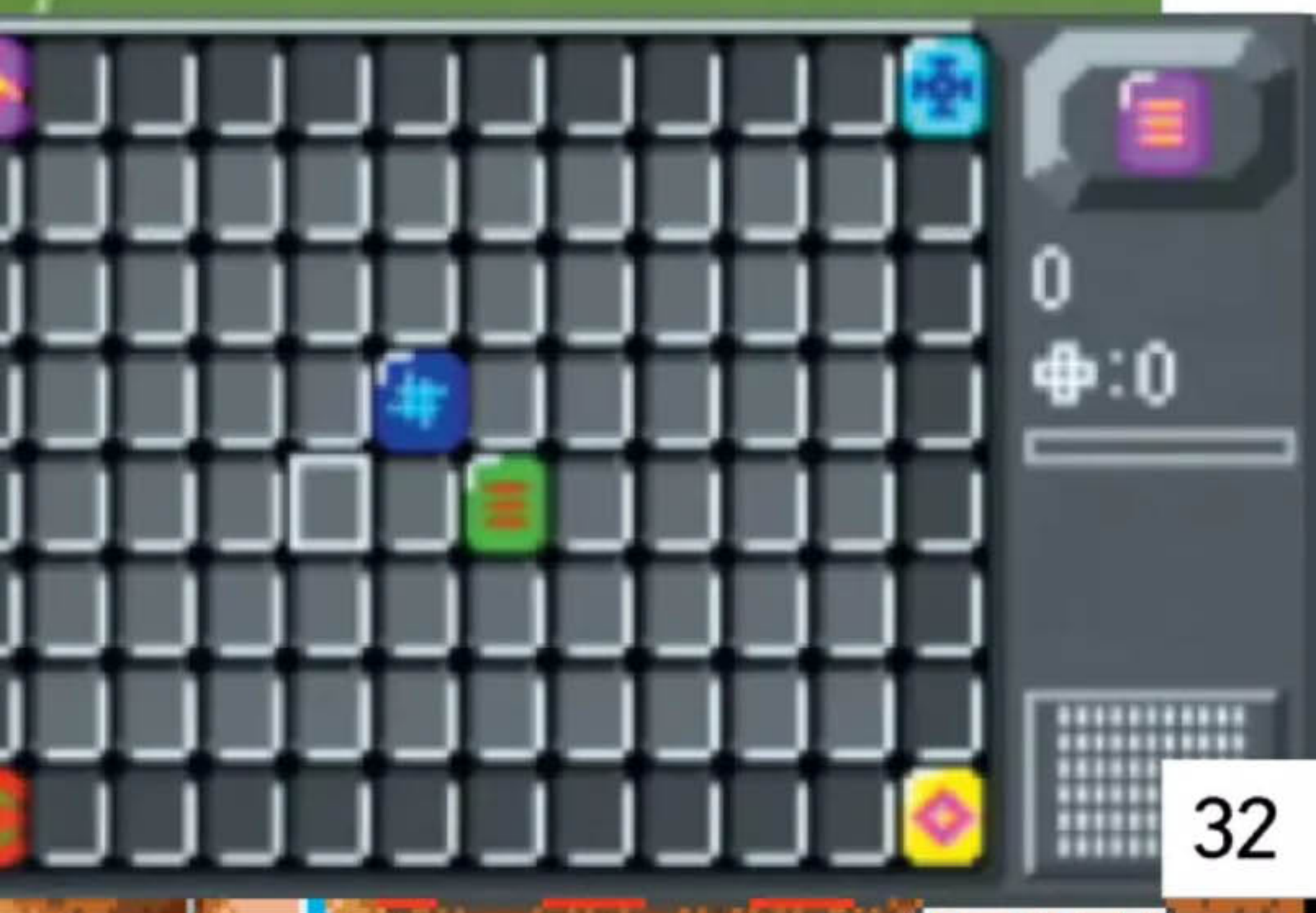

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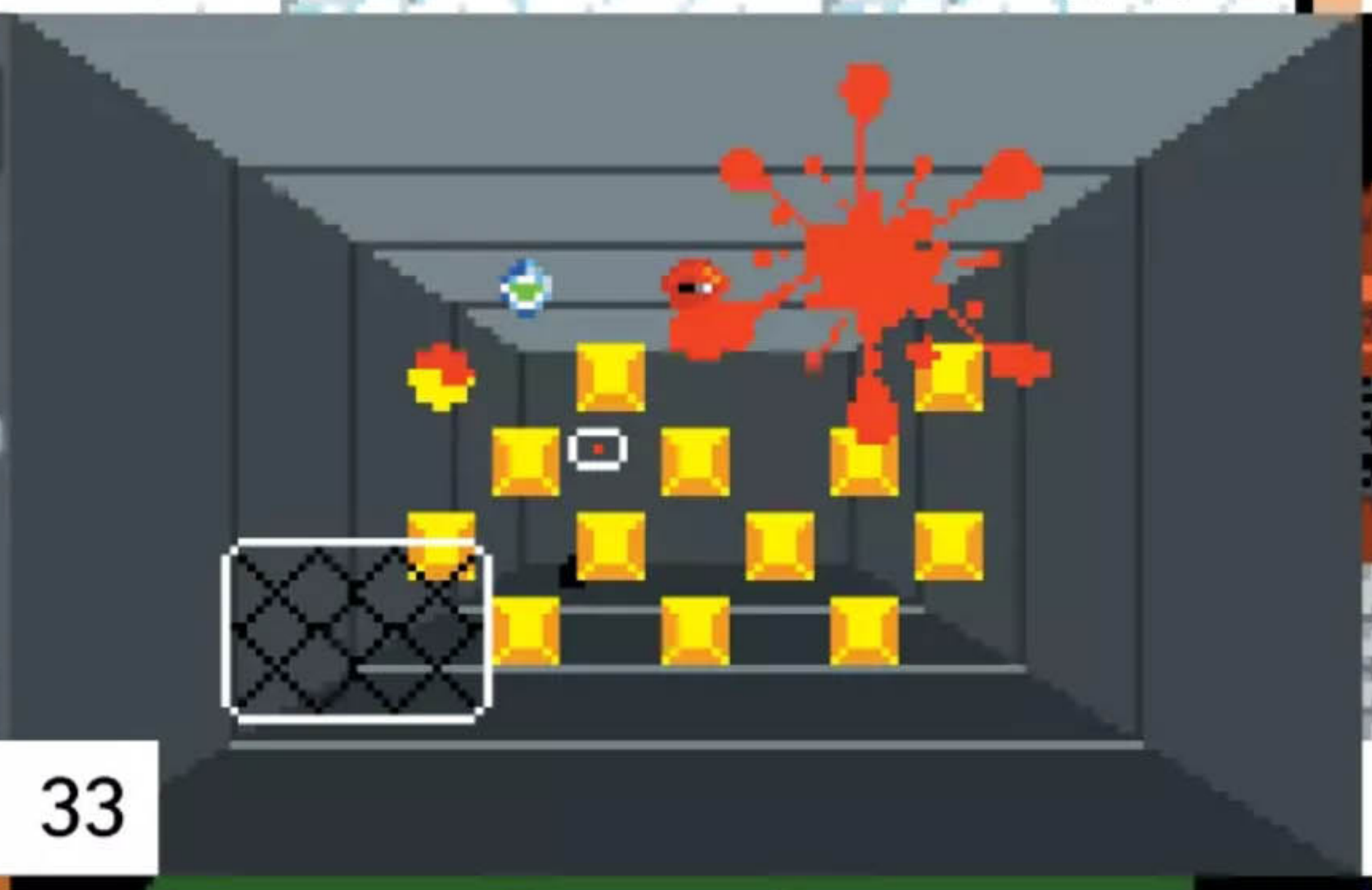

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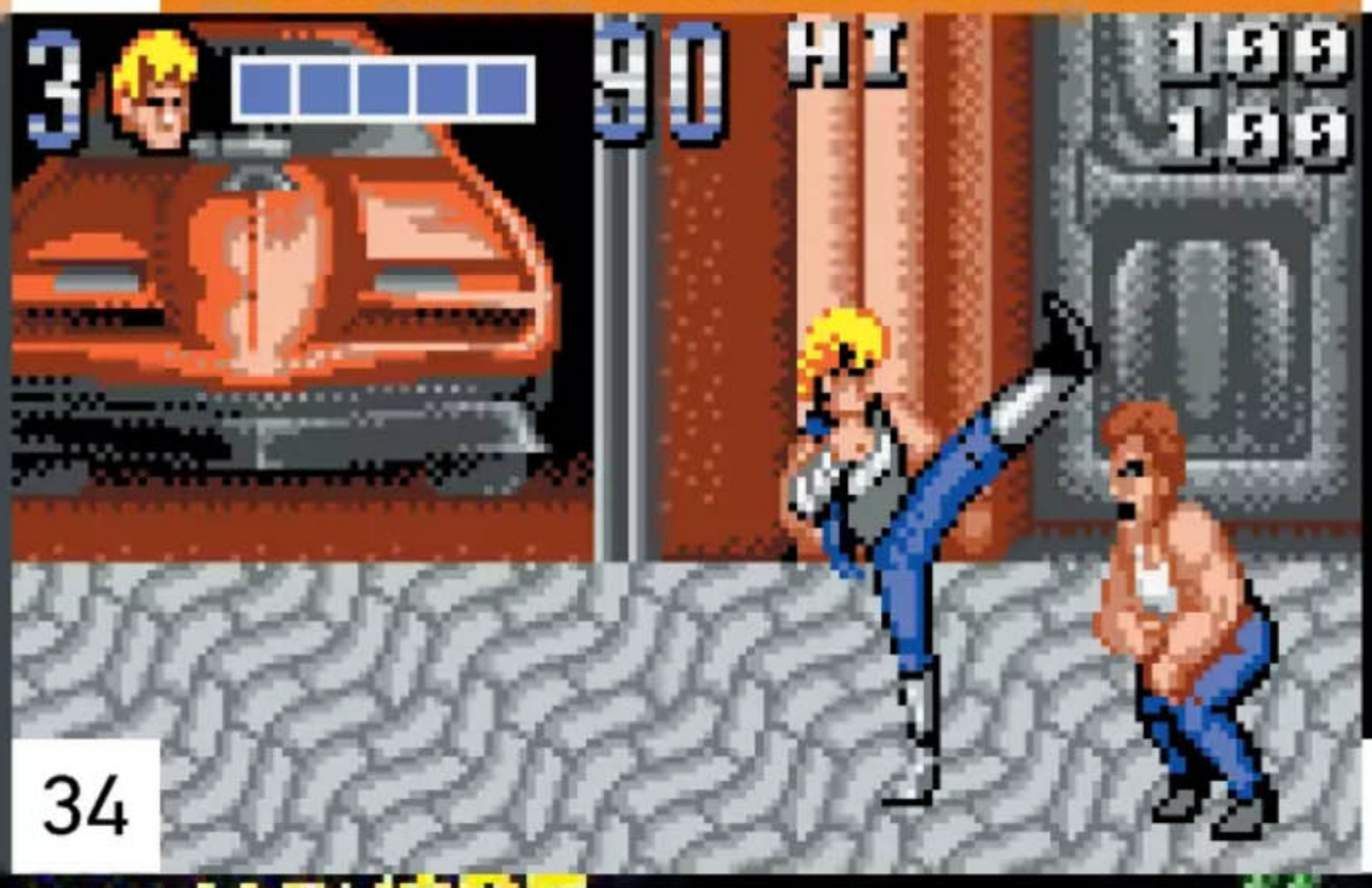
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HI
100
100

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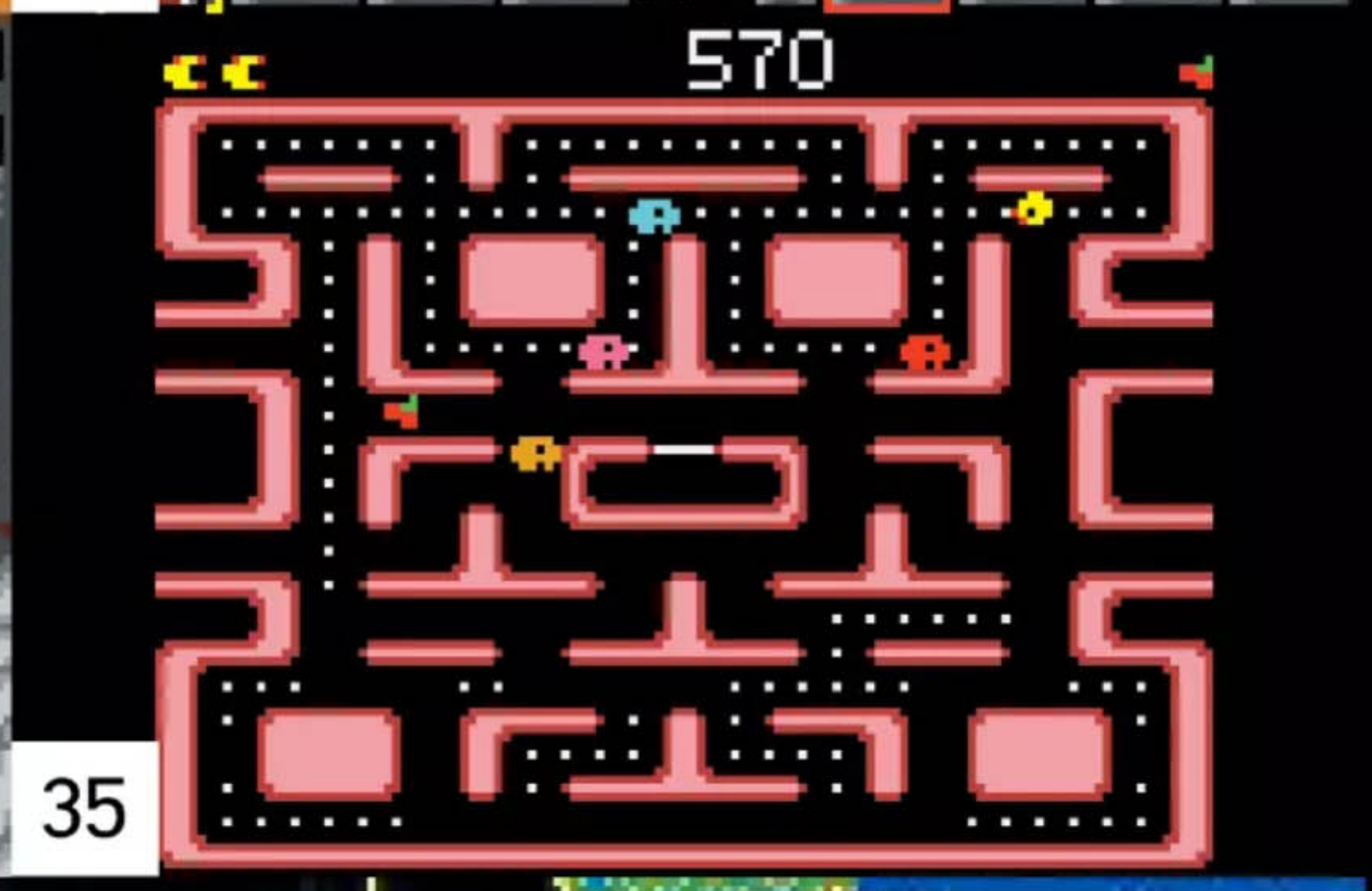

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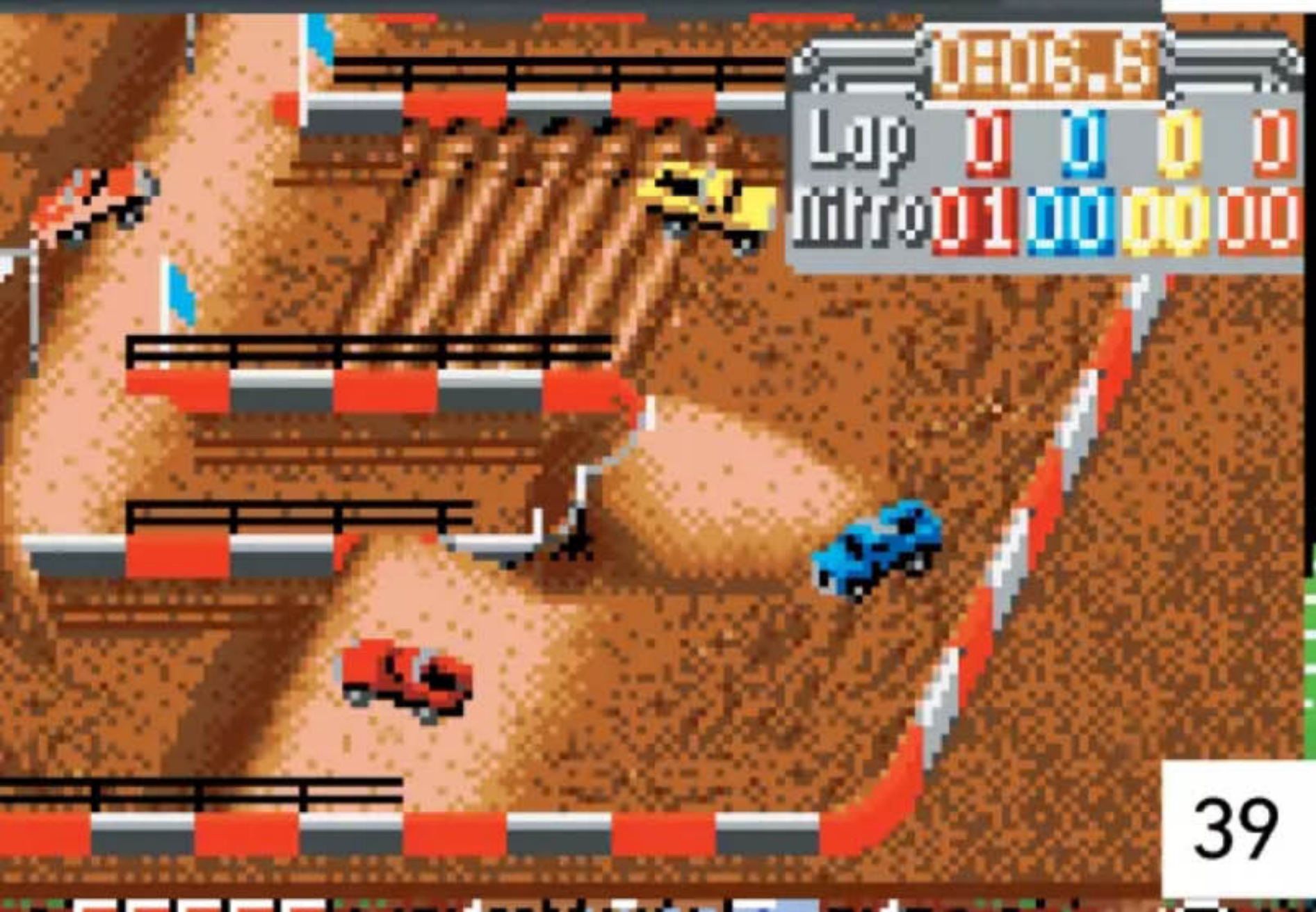
0:06.6
Lap
Nitro

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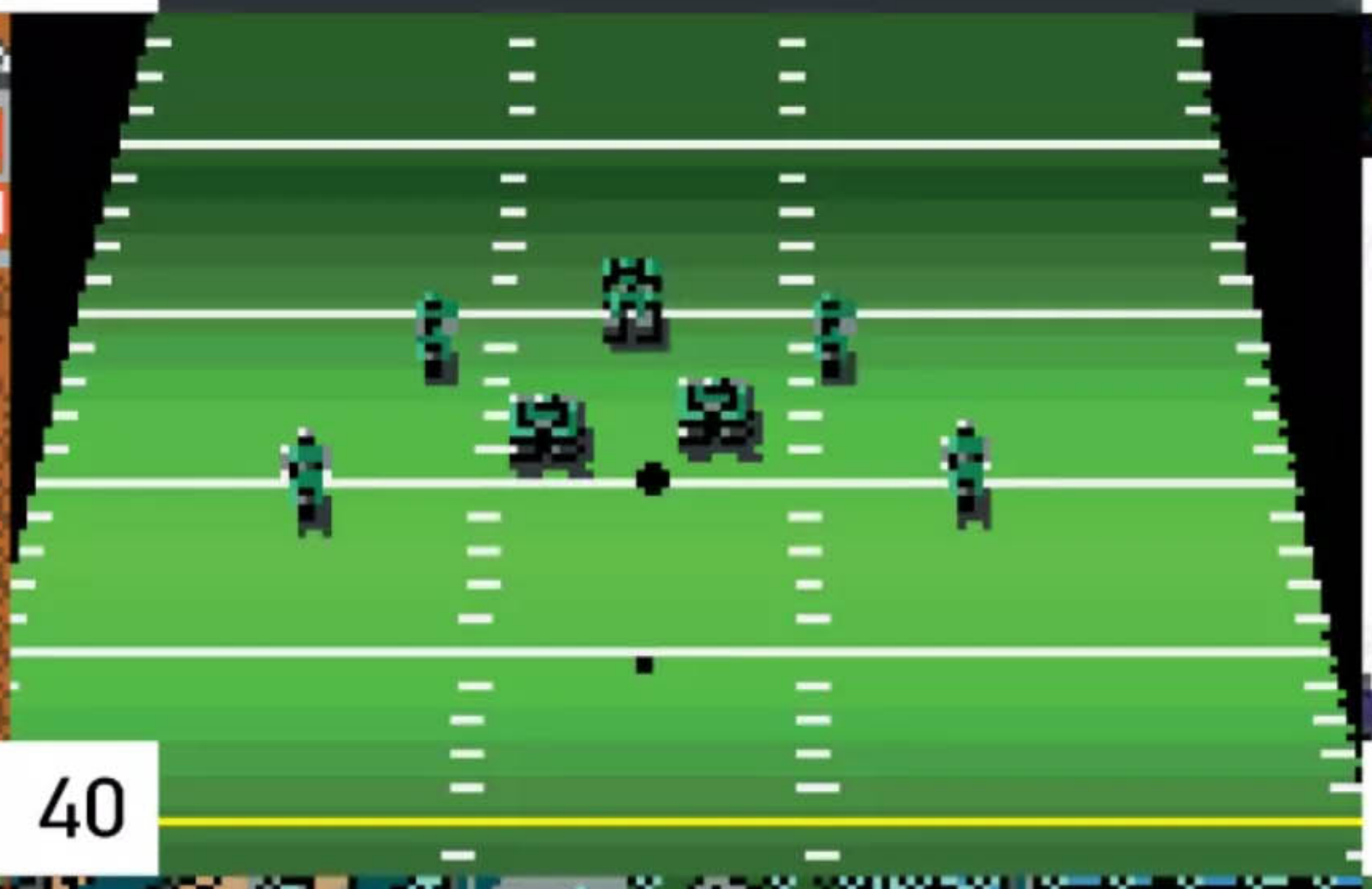

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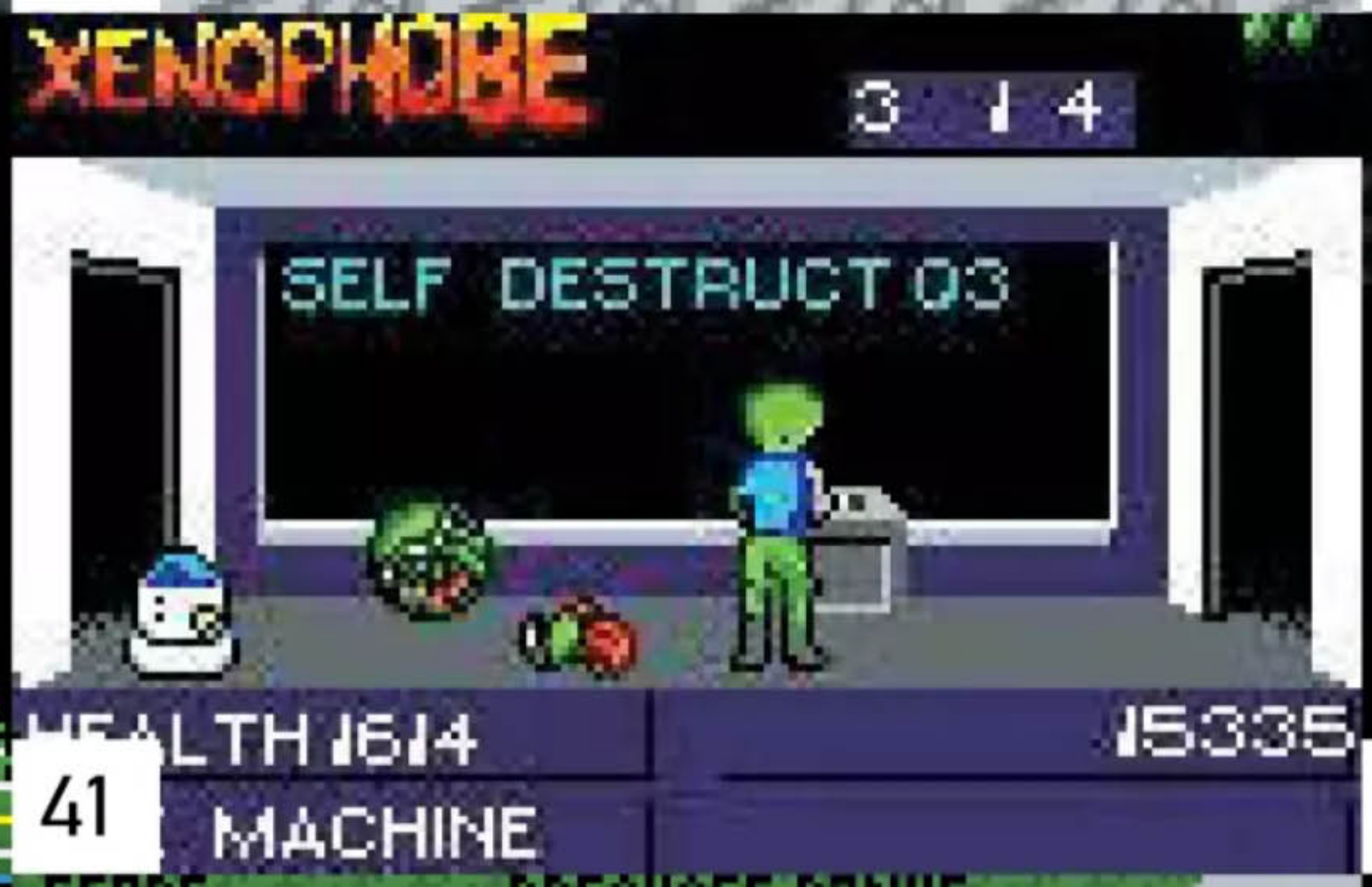
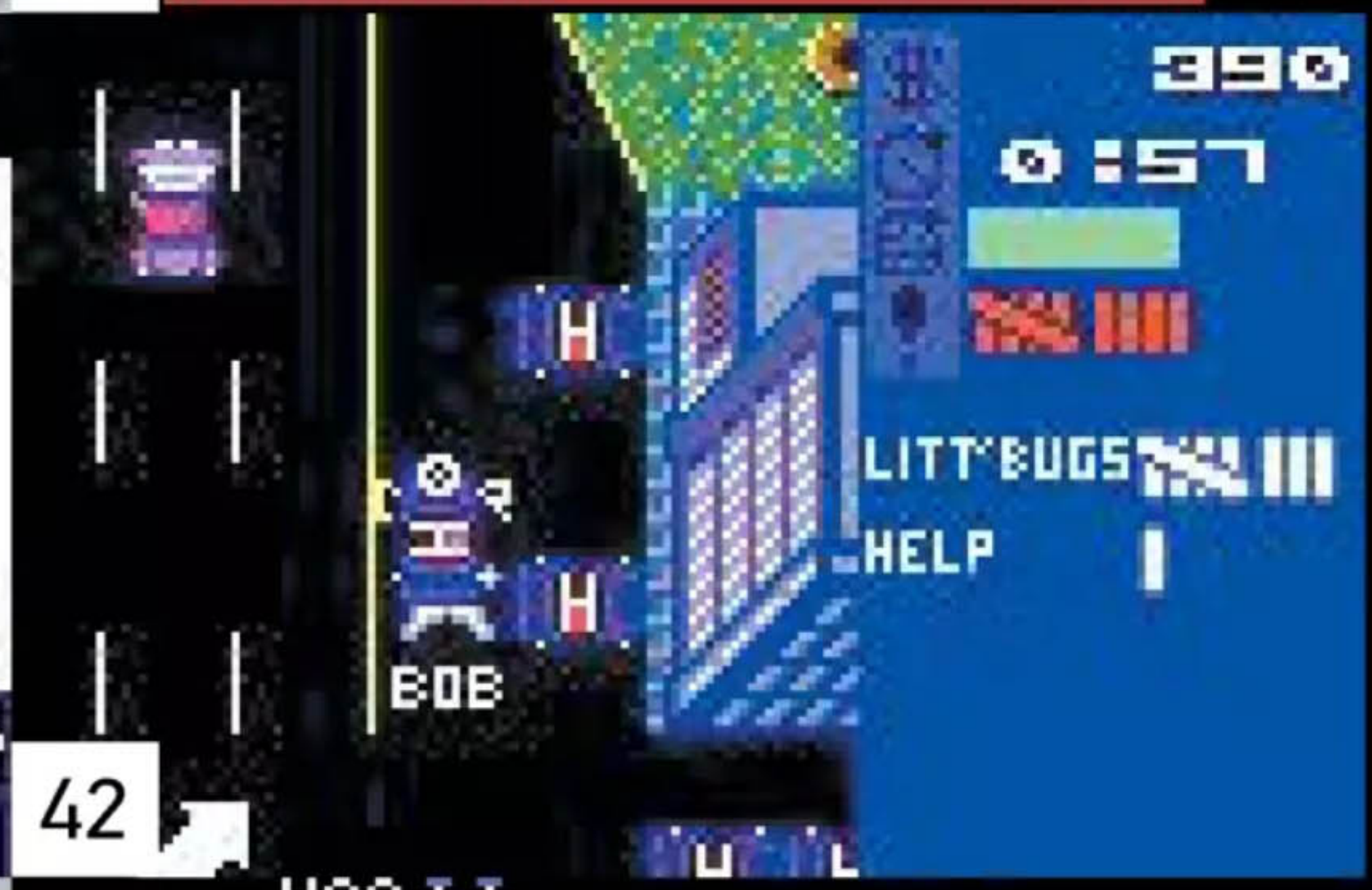

XENOPHOBE
3 4
SELF DESTRUCT 03
HEALTH 1614
15335
MACHINE

41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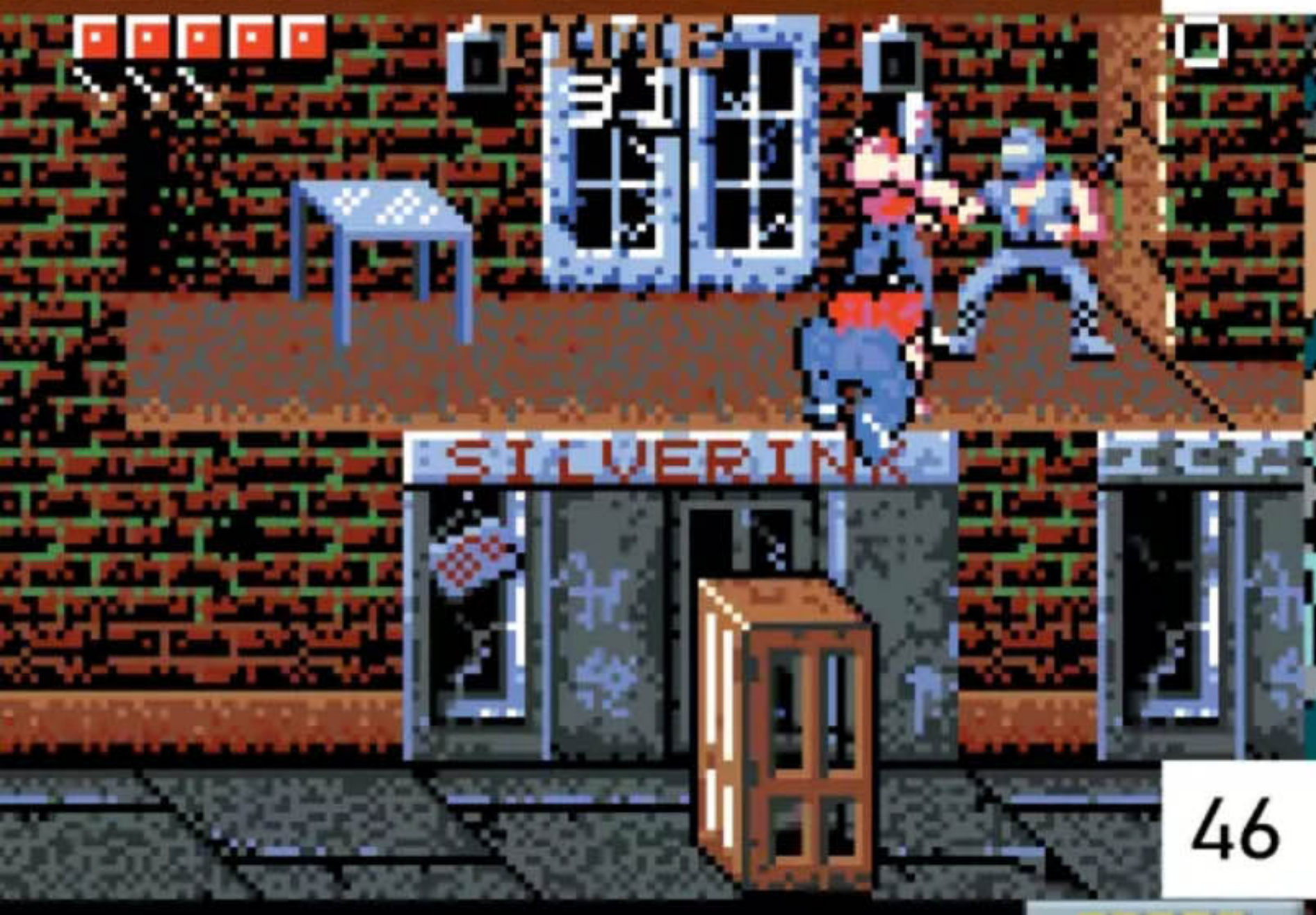
0:57
LITTBUGS
HELP
BOB

42



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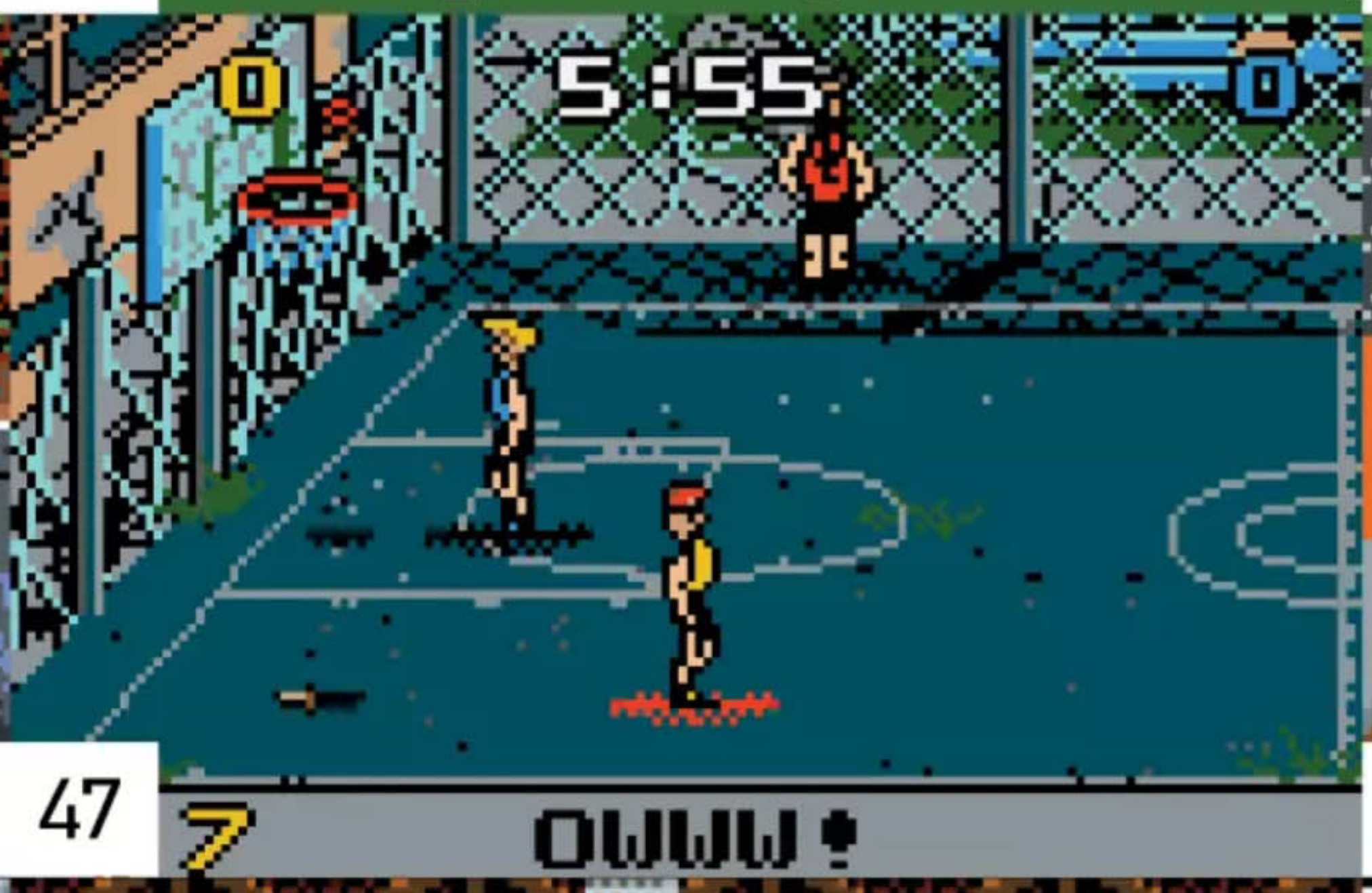

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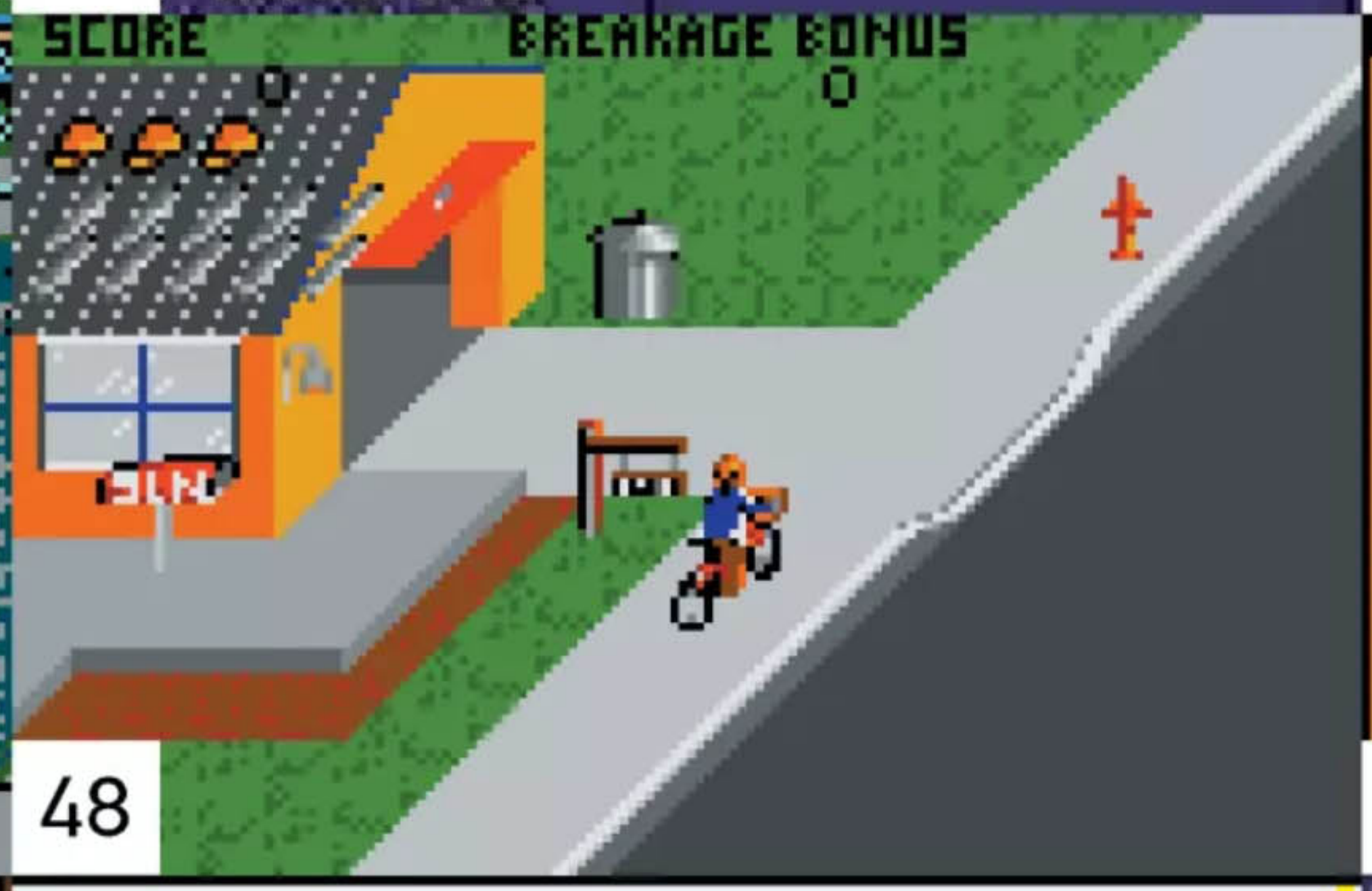
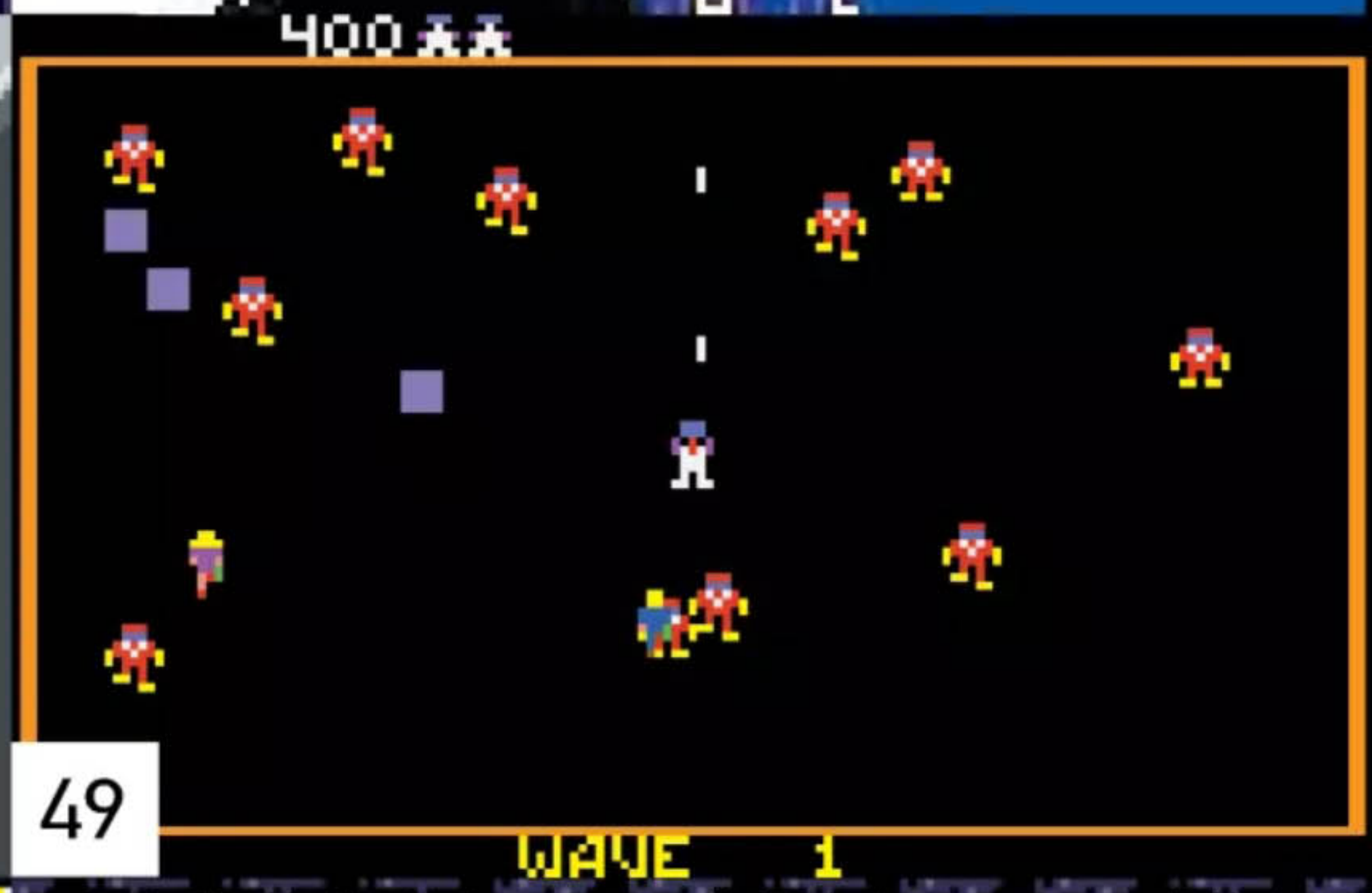

SCORE
BREAKAGE BONUS
0

48



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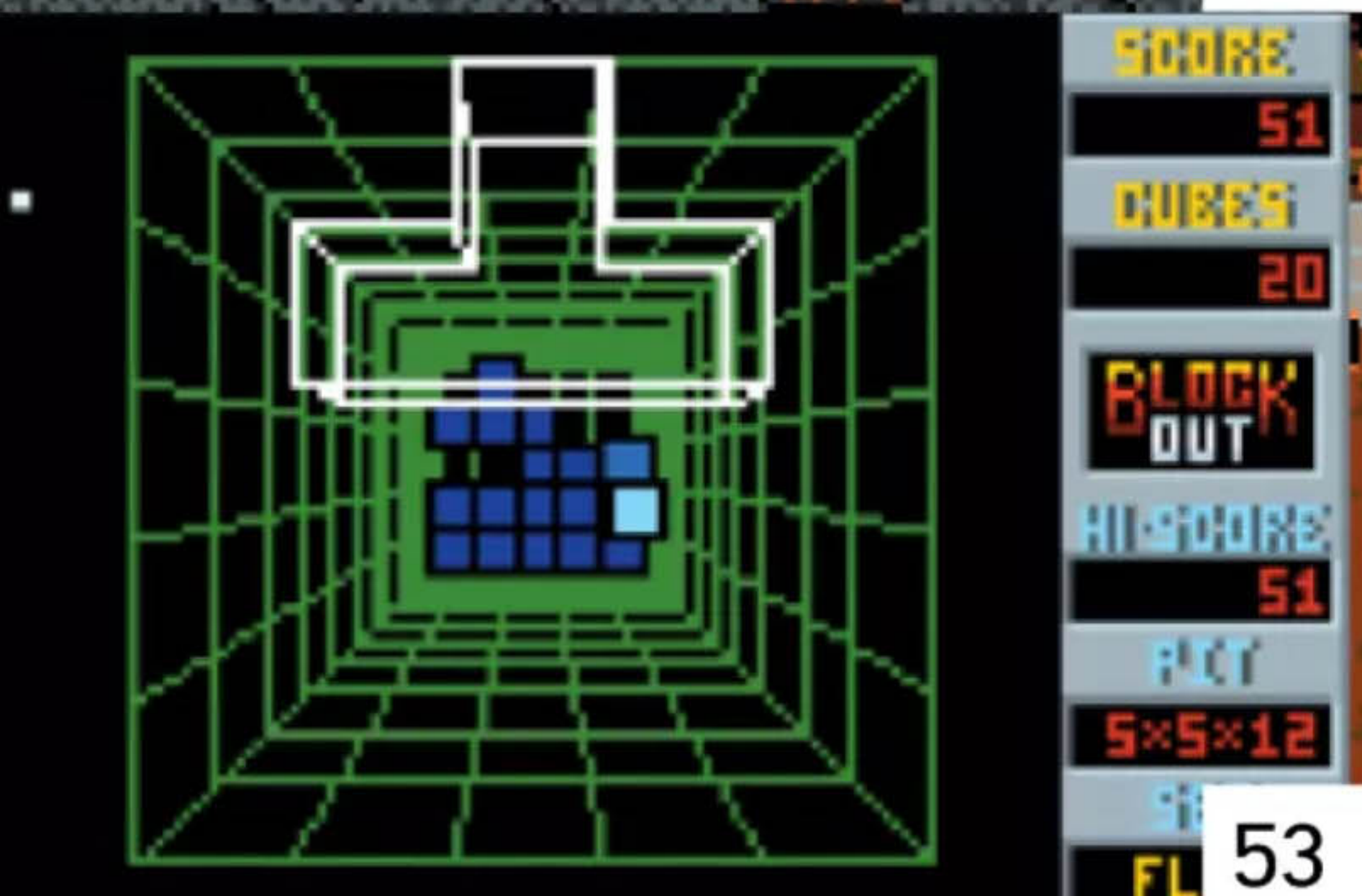
SCORE
51
CUBES
20
BLOCK OUT
HI-SCORE
51
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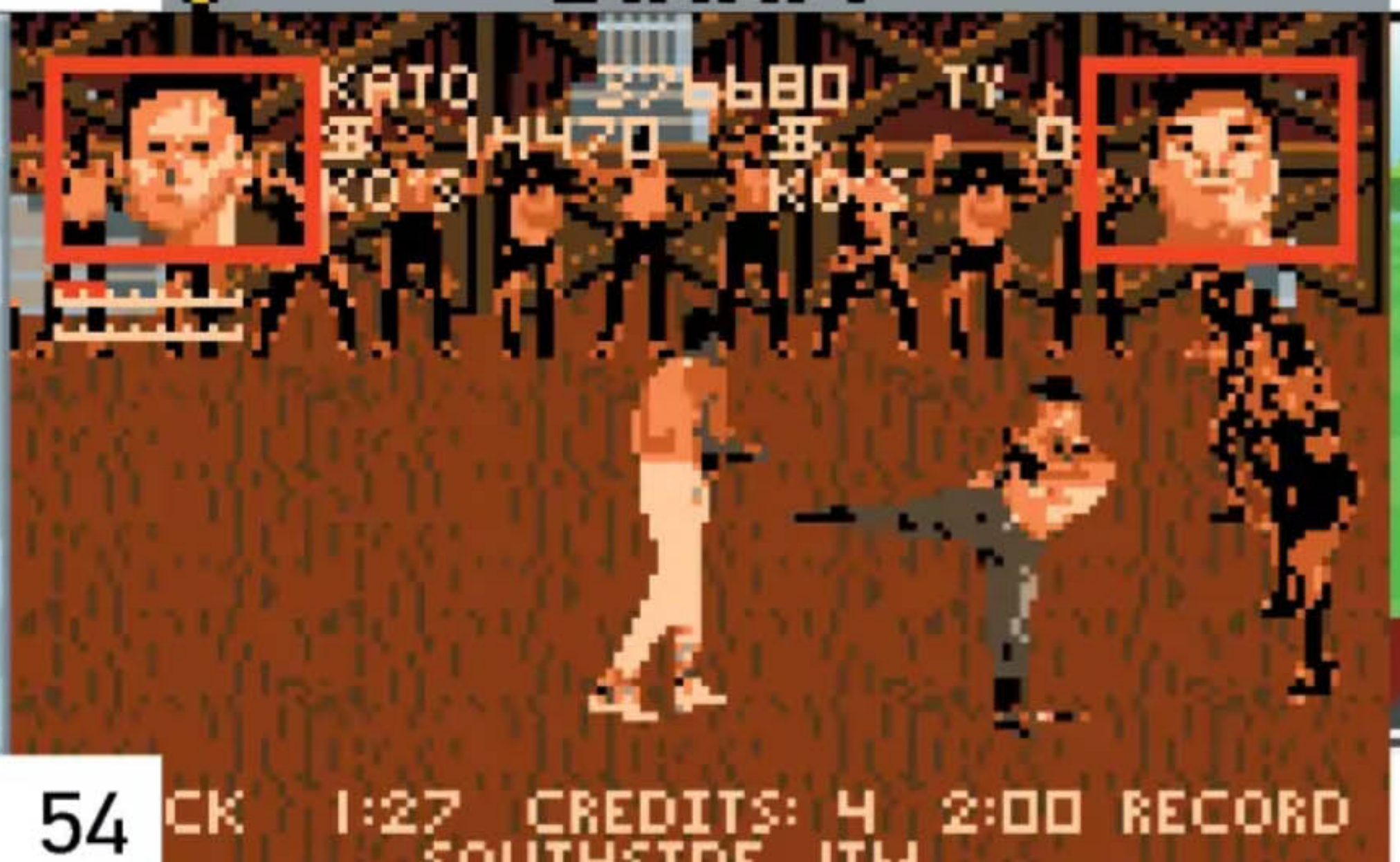
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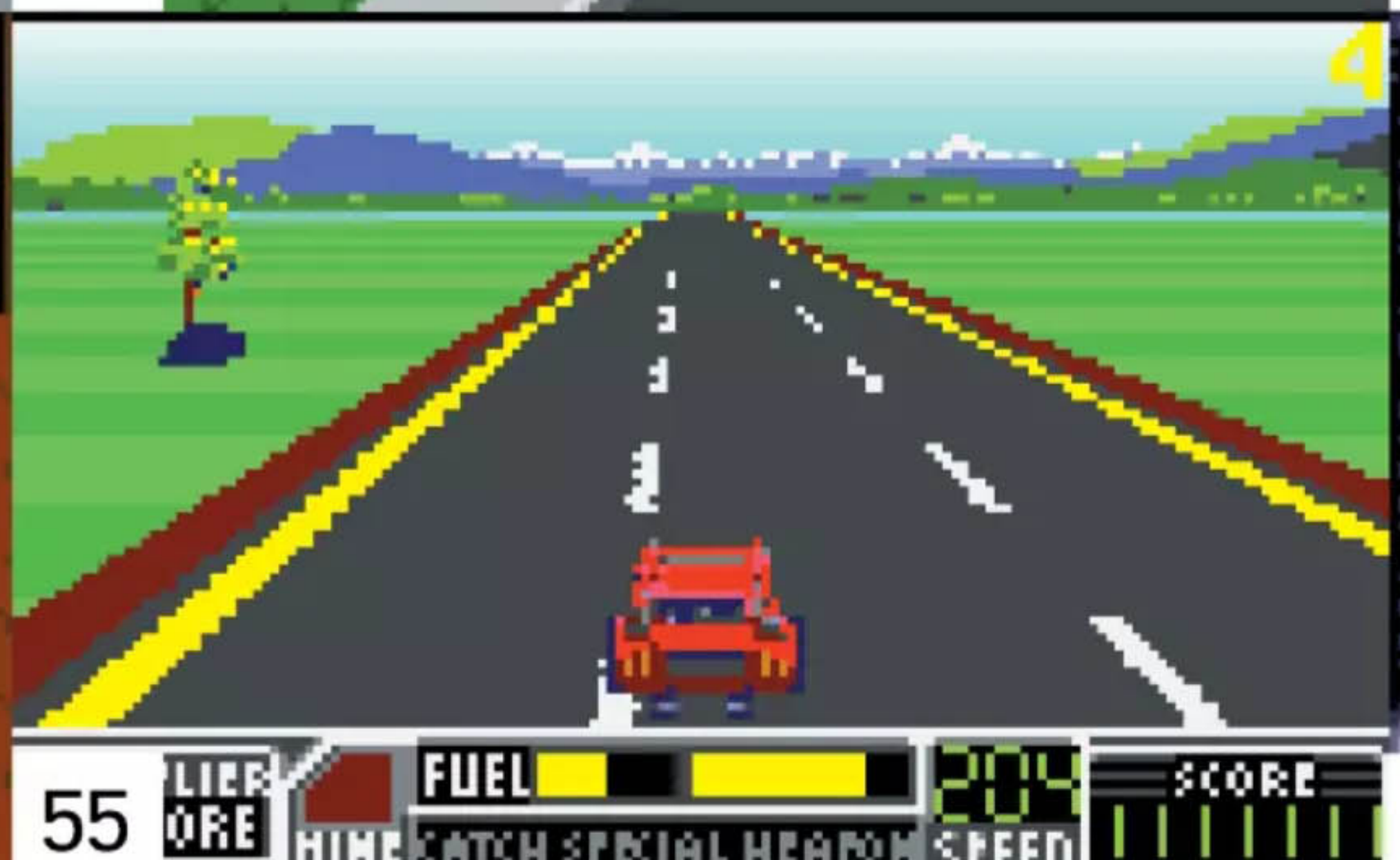

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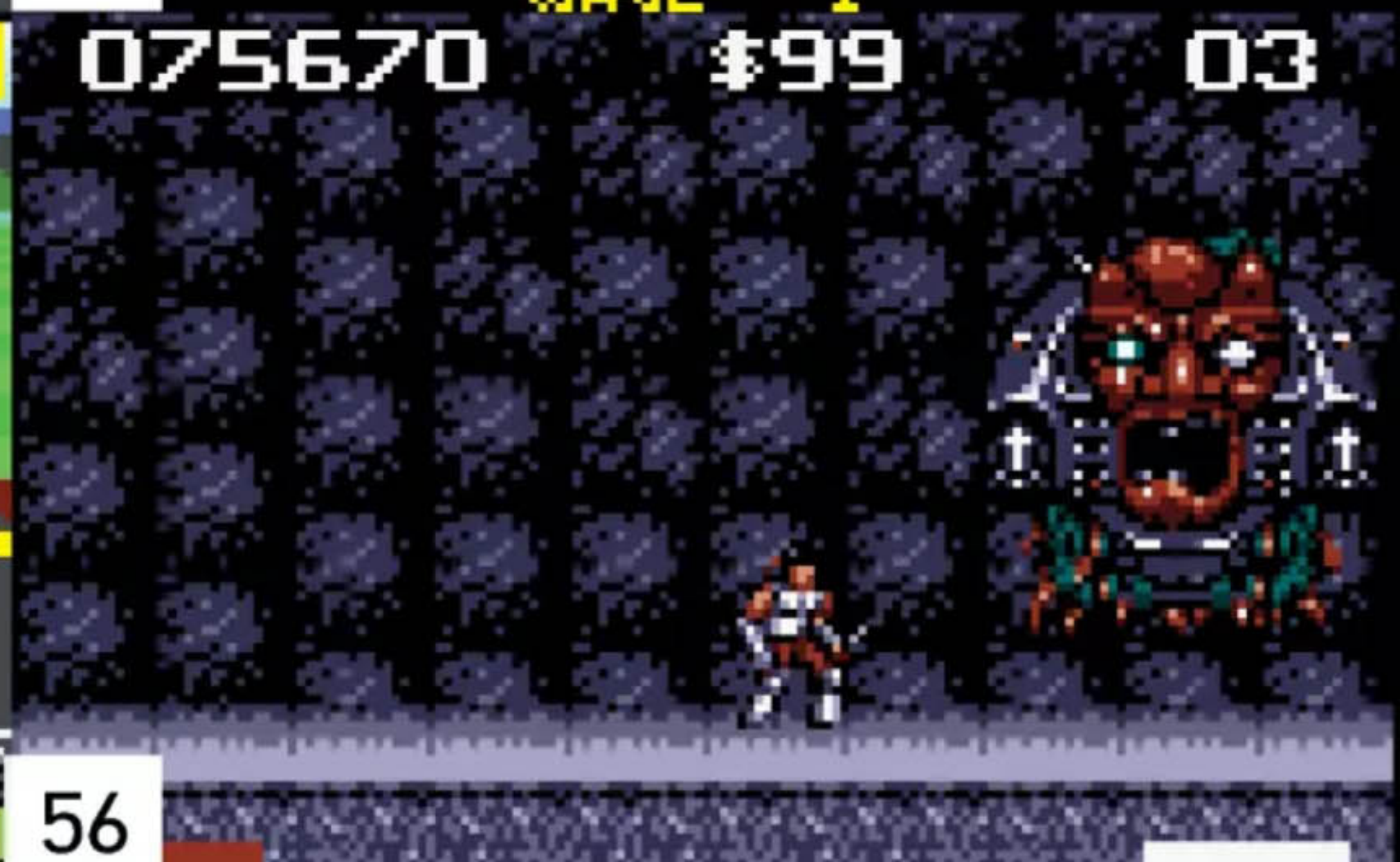
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DATAFILE

YEAR RELEASED: 1993

ORIGINAL PRICE: $249.99 (USA), £199.99 (UK), YEN 24800 (JAPAN)

BUY IT NOW FOR: £20-£40 (EBAY)

ASSOCIATED MAGAZINES: JAGWIRED (FANZINE), SEVERAL INSERTS, EGM, GAMEFAN, GAMEPRO, EDGE

WHY THE JAGUAR WAS GREAT… AT LAUNCH FAR MORE POWERFUL THAN ANY OTHER CARTRIDGE SYSTEM, CONSIDERABLY CHEAPER THAN 3DO, AND THERE WOULD EVENTUALLY BE SOME AMAZING EXCLUSIVE GAMES RELEASED. BUT THE JAGUAR AND CD ADD-ON ONLY TRULY EXCELLED AFTER HASBRO INTERACTIVE RELINQUISHED THE RIGHTS TO IT. IT STILL THRIVES TODAY

DOOM
JAGUAR
64-BIT
MATURE
M
JAGUAR
ATARI
64-BIT INTERACTIVE

ATARI JAGUAR

LESS THAN ONE HUNDRED GAMES RELEASED, CORPORATE CEOS WHOSE BEHAVIOUR BEGGARED BELIEF, AND EVENTUAL PUBLIC APATHY; THE JAGUAR WAS A COMMERCIAL FAILURE. YET LOOKING BENEATH THE SURFACE THERE ARE MOMENTS SO AMAZING, THE MACHINE DESERVES AN ENTIRE BOOK DEDICATED TO IT. JOHN SZCZEPANIAK SETS THE RECORD STRAIGHT ON ATARI'S LAST SYSTEM

MULTIMEDIA SYSTEM

Atari's Jaguar is one of the most misunderstood and under-utilised consoles in gaming history. In many ways it's comparable to Sega's excellent Dreamcast: both had a short lifespan, have their own dedicated conventions, were the last consoles produced by their respective companies, and both continue to live on through thriving independent development communities who love the machines.

Despite being championed as an American machine, Jaguar was actually conceived by British minds in Cambridge, Britain becoming a key supporter of Atari's ill-fated beast. The planned VR headset, launch title *Cybermorph*, and critically acclaimed classics *Tempest 2000* and *Alien Vs Predator* were all developed by Brits (though *AVP* had American assistance).

Uncle Clive?

Martin Brennan and John Mathieson, who had left Sinclair Research after Amstrad took over, formed a Cambridge-based company in 1986 called Flare. It's reported they took with them, or were at least influenced by, the designs of the aborted Loki computer project being developed at Sinclair. Regardless of Loki's alleged influence, the pair began work on their own multiprocessor games machine, which eventually became the Jaguar. *Alien Vs Predator* lead programmer Andrew Whittaker has said on record that apparently some of the Loki technology also ended up in the SAM Coupé and as a result it "shared many interesting features with the Jaguar in terms of its video chip."

Brennan and Mathieson wanted to enhance their system's performance, so contacted Atari. Despite working on the eventually abandoned Panther console (which documents show had several similarities to Jaguar), Atari liked what it saw at Flare. Another studio, Flare 2, was formed to complete development of the new 64-bit system. Jaguar progressed quickly and in 1991 Atari cancelled the Panther, despite having said it was ready for production. Jaguar's launch (which some call hasty) was in December 1993, but Europe was severely undersupplied. It was even released in Japan, though wasn't popular (less than 5000 were reportedly sold), and in March 2006 Famitsu produced a satirical video on it. Strangely, Jaguar even officially made its way to Korea! Daryl Still, of Atari UK, spoke openly. "I was Marketing Manager, PR Manager, and Co-Managed the European Studios (producing titles like *Attack Of The Mutant Penguins* and *Fever Pitch Soccer*). There were only a dozen or so of us left, so we all multi-tasked!" Mr Still elaborated on initial UK reactions. "The press and retail reaction to the hardware itself was immensely positive. More importantly the public demand was huge. Some of the titles were revolutionary. *Alien Vs Predator* was probably the first FPS that focussed on tension and fear instead of non-stop shooting. As a result, Edge misunderstood it entirely and gave it 4/10 and got completely lambasted by the public. The issue we faced was availability. Europe was promised 250K units for the first Christmas, but received only 25K in early December, with a further 25K on Dec 23rd."

Despite initially outselling the nearly triply priced 3DO, Jaguar didn't succeed. Many blame Atari for rushing; higher quality titles were delayed for several months. I asked Daryl Still about any negativity in the UK. "To be honest, we didn't detect any negativity regarding the machine. Some of the software titles were average,

JAGUAR FESTIVAL

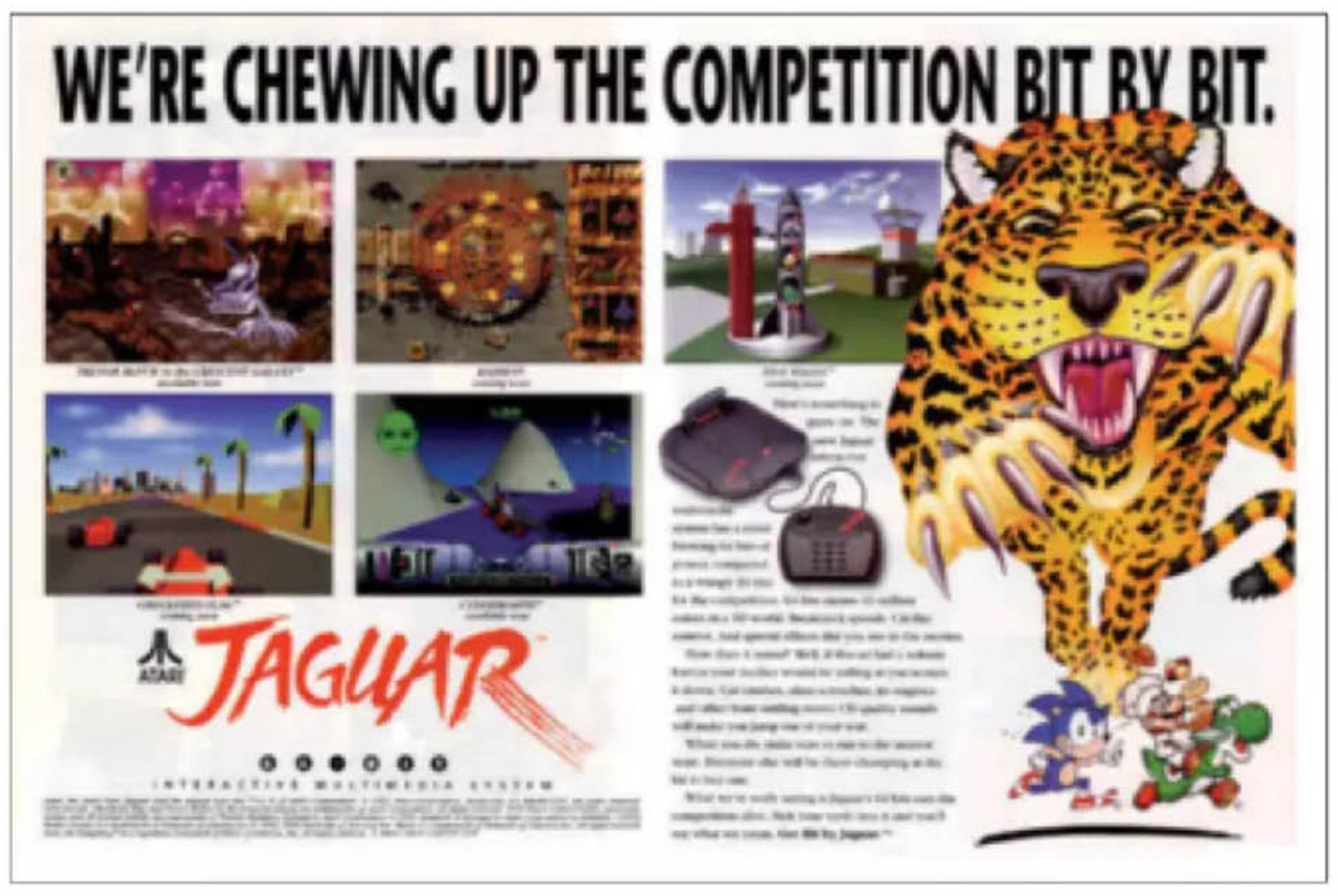
Good buddies, a few beers, affordable merchandise, and 32-player networked Jag action; internationally held JagFests are the zenith of Atari gaming (image: Euro Jagfest 2004). We asked Kevin Manne, original co-organiser of the first 1997 event in Chicago, to tell us more about the now annual event.

"JagFest was a way for like-minded gamers to get together and enjoy Jag gaming. The biggest draw, I would say, is the networking abilities – JagFest is the only time you'll get to play a large network of Battlesphere, Air Cars or even head-to-head Doom. Not only would it be very expensive to buy all the necessary hardware, finding enough people willing to play locally can be a challenge. JagFest [also] gives fans the chance to see rare and one-of-a-kind items from each others' collections. Rarities such as the Jaguar VR, Jaguar Voice Modems, prototype and unreleased games are all fascinating pieces of Atari history."

but we always had more demand than we could supply for hardware. Coping with consumer demand and frustrations at Christmas was probably the hardest thing. There is nothing worse than a mother who cannot get what her child wants for Christmas, and we had them camping out in our reception in Slough." According to Mr Still, criticisms were raised not at the system, but their handling of it. "It was frustrating, because there was 12-15 of us TOTAL, doing a Europe-wide launch of a major electronic commodity with absolutely zero budget, getting pages upon pages of press coverage and building an enormous demand. And we were hearing that we were rubbish at marketing, from journalists who knew absolutely nothing about the reality of the situation. You felt like screaming at them 'C'mon then, you come and see if you could do any better with our finances.' But of course we couldn't say a word about it. We just had to keep on going."

The American side of things was markedly different according to Steven Kent, in his Ultimate History book. The Tramiels' reputation and previous tactics alienated many; some retailers refused to stock Jaguar. Only a few of the supposed 200 developers that pledged to make games delivered. Of these, several were lazy 16-bit ports which didn't take advantage of the hardware. With more powerful systems from Sony, Sega and Nintendo on the horizon, public apathy set in. People also disliked the controllers. While having 12 numerical keys which you can customise with game-specific overlays was brilliant in theory, most found them cumbersome. Atari tried to remedy this with the Pro Controller, but few games utilised it.

In 1995, after two years of Atari haemorrhaging cash, Sam Tramiel had a heart attack. A year later Atari was 'reverse merged' with Hard Drive manufacturer JTS. Stock plummeted to record lows, the company went bankrupt, Jaguar ceased, and the Atari division was sold to Hasbro Interactive, later bought by Infogrames. Countless other publications have covered these events, but at Retro Gamer we tracked down, stalked, and like the proverbial Jaguar, pounced on those who were once there in the vortex.


WE'RE CHEWING UP THE COMPETITION BIT BY BIT.
JAGUAR

» Atari directly challenged the competition. Look, they're about to gobble up Sonic, Yoshi and Mario.

In the Eye of the Jaguar

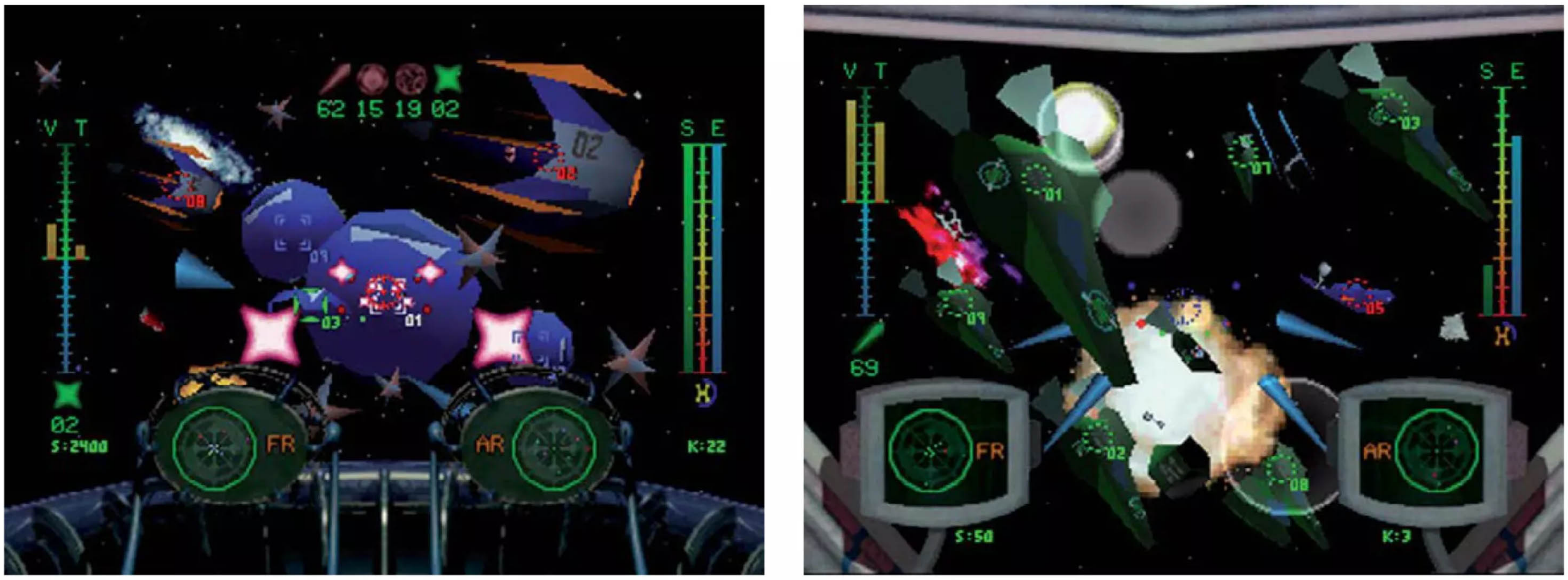
One of the problems was publicly proving Jaguar's strength, something not helped by confusion over 64-bit architecture. US magazines contested its power. Developers, those best to comment, saw things differently. Prolific assistant to 3D Stooges, Kevin Manne spoke on media attitudes. "It's always been an 'us against them' feeling, trying to squelch common misconceptions. EGM had once said the Jag was only 64-bit if you added up the 'bitness' of multiple processors, when in fact [it] does have fully 64-bit components. Once a system gets a bad reputation, it's hard to gain mass acceptance."

Doug Engel of ScatoLOGIC, who co-developed the greatly underrated *Battlesphere*, and also ScatBOX hardware, is obviously a huge fan of Atari's console and responded fervently. "Jaguar was truly a '64-bit system'. Some people equate bitness with power on a linear scale. It's like equating the number of cylinders in a car engine with horsepower. Most people think a V8 has a huge advantage over a 4 cylinder, but [early 20th Century V8s had less power compared to modern 4 cylinder engines]. A 64-bit processor from 12 years ago is easily bested by a 32-bit processor made today. There

» If you're looking for a good adventure, try *Highlander* on the Jag CD. It was based not on the films, but on the animated series.

ATARI
PROCONTROLLER
ATARI
JAGUAR
64-BIT
INTERACTIVE ENTERTAINMENT SYSTEM ACCESSORY

» Atari released the Pro Controller near the end, adding 3 extra face buttons and 2 shoulder buttons.



» The highly acclaimed *Battlesphere*. Free-roaming combat plus countless ships, explosions, and special effects push the Jaguar more than any other game, showing just how powerful it was.

were lots of arguments saying the Jag wasn't 64-bit. Speaking as a developer, I can say it was!"

Even without the confusion of how much "bit muscle" its Tom and Jerry chips pushed, many labelled the M68000 processor as not only weaker than up-and-coming systems, but barely superior to past consoles. Engel contests this and elaborates. "The Jaguar was most definitely not underpowered compared to systems like the SNES and Genesis. It was difficult to program for because the development tools were in an unfinished state and the hardware had crippling bugs. There was no knowledge base to consult and nobody had experience. Ten years later, there's a lot of sample code and many with experience, so though we still have to use buggy development tools, it's much easier to make games today than when it came out."

> "YOU FELT LIKE SCREAMING AT THEM 'C'MON THEN, YOU COME AND SEE IF YOU COULD DO ANY BETTER WITH OUR FINANCES.' BUT OF COURSE WE COULDN'T SAY A WORD ABOUT IT. WE JUST HAD TO KEEP GOING "
>
> DARYL STILL ON JOURNALISTS

At the time no one harnessed the system's true power, only recently have developers really seen what's capable. Skilled programmer Steven Scavone, key member of 3D Stooges which released *Gorf*, still develops for Jaguar. Comparing it to systems he's worked on, Scavone elaborated on tech-specs, also explaining in laymen's terms. "It should be coded in as much assembler as possible. This machine flies when fuelled by assembler. The RISCs in proper concert with the 68k will do some absolutely amazing graphics. The Jaguar could [utterly] crush any 2D system. It's a lot easier to program in 2D for than the PSX or N64. You can thank the Tramiels for it being 'underpowered'. The chips were not complete and had bugs. The designers, who weren't experts in silicon design, missed fundamentals. Just one more register and [it could have run without stalling all the time]! If they [had fixed this], the Jag would have blown away the PSX. Later 3D titles like *Battlesphere* proved that systems at the time were no match for it."

Quite a revelation! We questioned Scavone further about the PlayStation comparison. "The textures are cleaner. PSX is faster but much uglier and unfixable [since it's built into the] hardware. Jaguar is more flexible and can [remove texture] ugliness. Then there's the VLM in the CD player, which blows PSX away in disc access speed, [which] was awful with load times. The Jaguar was surprisingly fast."

High profile coder Scott LeGrand, who co-developed *Battlesphere* alongside Engel, gave his own comparisons. "The Jaguar was anything but underpowered. It had more computational firepower than anything else of that era, including the original PlayStation. [Jaguar] was actually easier to code for than the Saturn. However, PlayStation had hardware 3D acceleration, was a dream to code, and had Sony's marketing muscle behind it. Atari didn't stand a chance." PlayStation had built-in hardware acceleration; everything had to be done manually with Jaguar. LeGrand explains more, "*BattleSphere* might have looked better on the PSX [in terms of raw polygon count], but its gameplay would have suffered. The Jaguar's multiple CPUs let me do things with physics and AI that were a good five years ahead of the rest of the industry. It wasn't until *Halo* that I finally felt utterly outgunned."

Atari's Jaguar obviously had lots of untapped potential, so we challenged the developers on its failure. LeGrand laments "Destiny, pure destiny. But not for the reasons everyone thinks. The Jaguar was a dream to code compared to the PlayStation 2. The real reason is that the Tramiels didn't have the resources to put together an adequate developer relations program, nor did they spend money to [license] titles like *Mortal*

» Jeff Minter is going to be really angry with us… But we preferred *Protector SE* over *Defender 2000*.

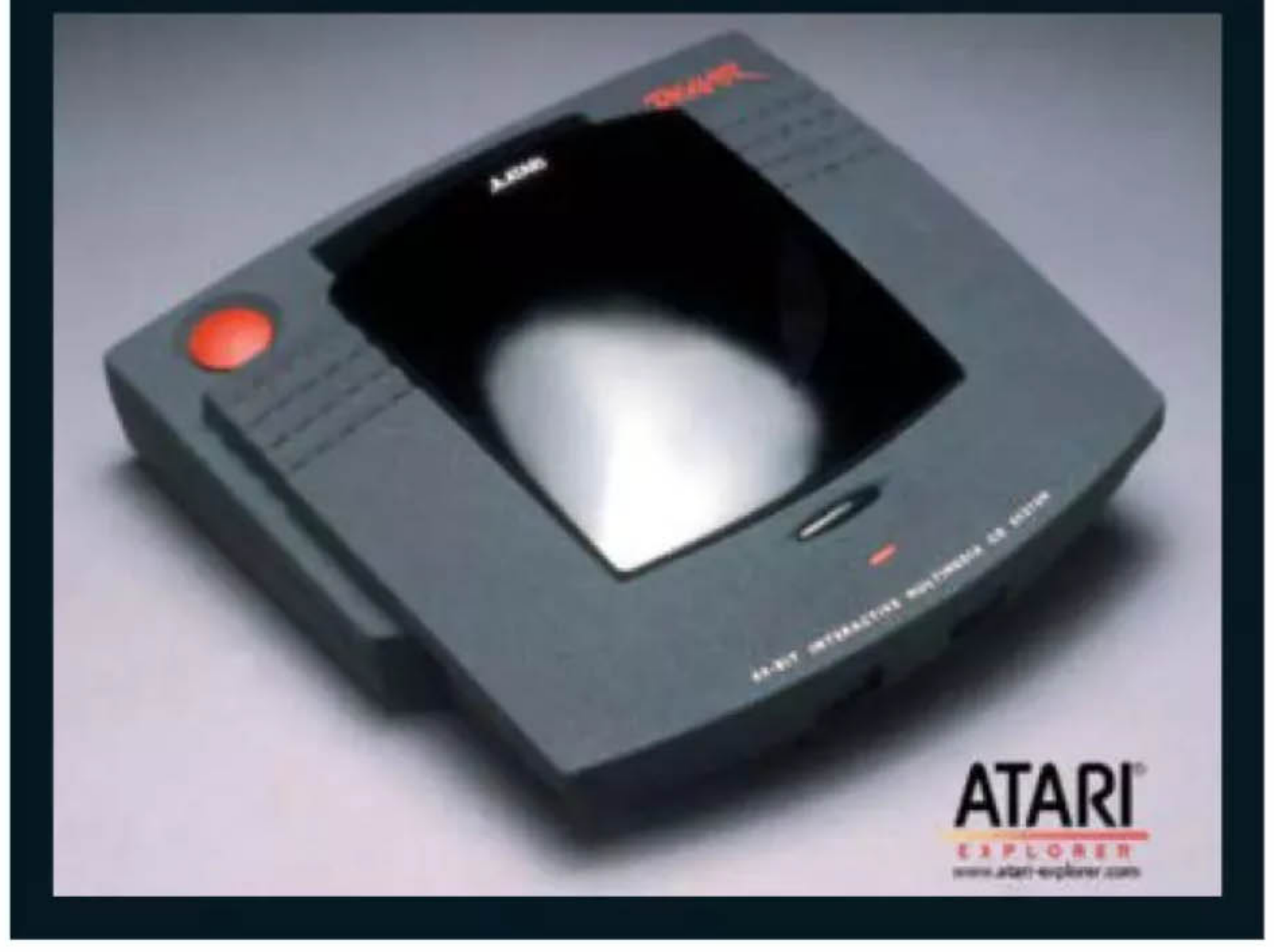
OTHER DEVELOPMENTS

Many exciting developments sprung from the Atari Jaguar. Many were cancelled, some were birthed into uncaring public arms, while others were created by fans. The Jamma Stick, Rotary Controllers (*Tempest 2K*), and specialist network equipment all came after the system died.

Few know the Jaguar hardware was used for arcades. They added Hard Drives and tweaked the technology, but it shows the system's power; CoJag (Coin Operated Jaguar) powered the *Area 51* arcade game.

Then there was the cancelled Jag Duo (pictured), a combined Jaguar and CD system. There was also the planned VR headset, with a few working prototypes around, and voice modem which would have allowed voice communication during online multi-player.

They also intended for Lynx connectivity; *AvP* originally used it as a motion tracker, but this was eventually scrapped. Finally, there was Jaguar II which was semi-complete. There were no games, but fans are working to finish it.



Kombat 2 (would have been the smartest $1million ever spent). Sony had money, big money."

LeGrand's colleague Engel complains there's too much to cover, adding, "Can't you write a book on this instead of just an article? Most of the problems relate to the fact that Atari was too small to compete with the giants. Jaguar was rushed because Atari didn't have the resources to [finish it on time]. Atari lacked the money to properly market it, and they made some poor choices when it came to [licensing] titles."

Arguably the biggest Jaguar collector in the world, Jason Smith of www.jaysmith2000.com, who provided resources for this article, agrees with Engel. "Atari marketing for the Jaguar left a lot to be desired that's for sure! A big part of the downfall without question."

> "THERE WERE LOTS OF ARGUMENTS SAYING THE JAG WASN'T 64-BIT. SPEAKING AS A DEVELOPER, I CAN SAY IT WAS!"
>
> DOUG ENGEL

Those working close to them weren't pleased with the Tramiels, as LeGrand explains. "The Tramiel kids meant well, all of them, but the skills required to run a corporation just weren't in them. These guys would run around poaching cash-starved, but innovative technology, and then inject the family fortune into it, until it [failed]. Then they'd pull the plug without telling anyone. Working with Atari was nonsensical. They were great at getting their technology into the hands of developers, but they didn't have the resources to put together competent developer support."

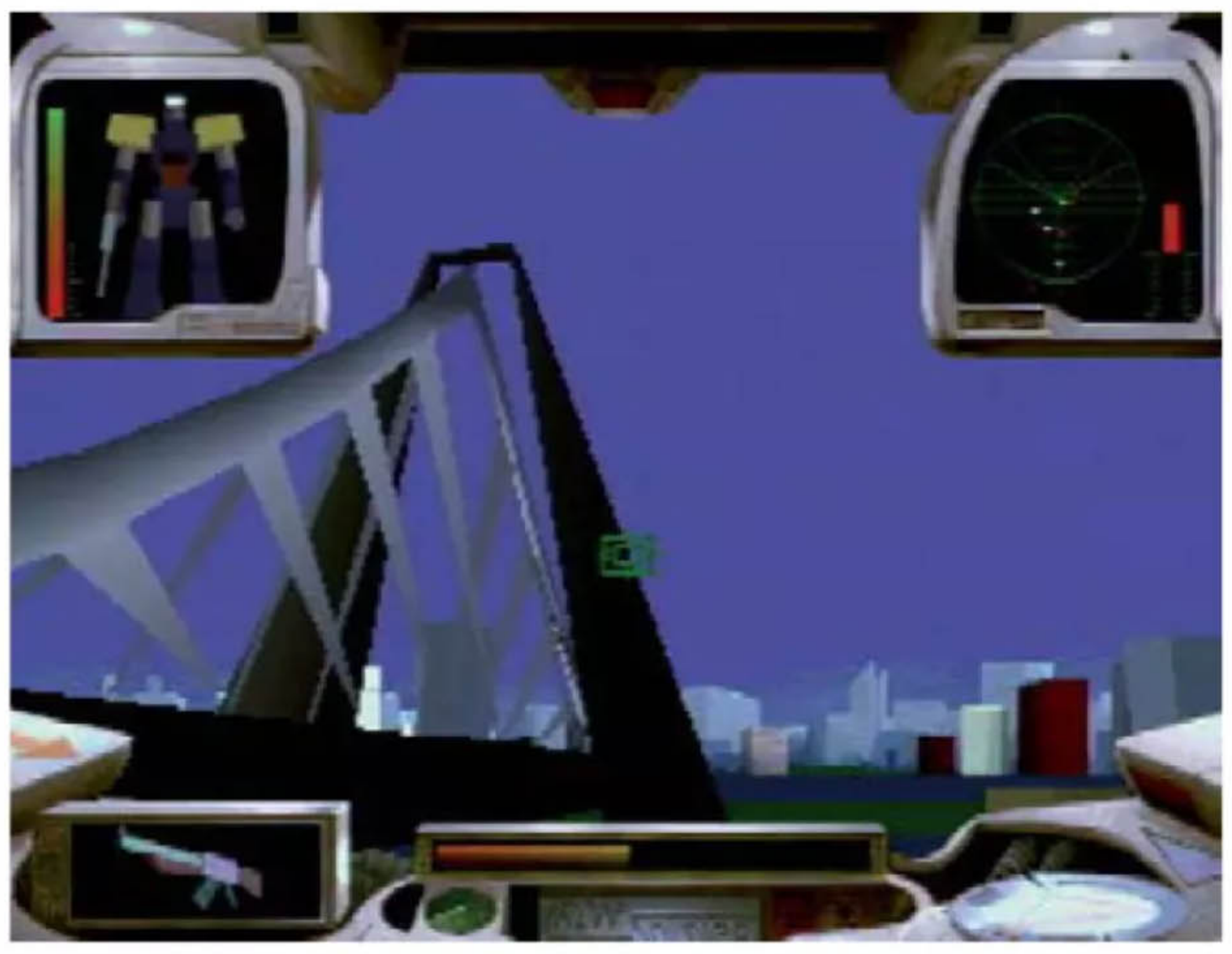
Internal Jaguar employee BeeJ West, who worked on BIWN, gave a lengthy and scathing critique of Atari USA. Some printable highlights, "The situation [there] might have broken less hardy souls. What did I think of Atari? Damn, there's an entire book there. I was utterly horrified by the state of affairs. [Anyone] could see something was rotten in the state of Tramiel. Everyone who worked on *Trevor McFur* knew the game was a total stinker, and the development environment made [finishing] even such a lame game nearly impossible. [It] was so hostile and adversarial [at Atari, that everything] took eight times longer. If that hadn't been the case, Atari might still be in business."

Engel was calmer with his appraisal of the Jaguar situation, "They helped occasionally, but mostly ignored us. I could write reams of stories about them, but I don't want this article to turn into a bash-fest. They did do some very positive things. They deserve credit for sending us a devkit when we were starting out and had no actual reputation as a developer."

Interestingly, the UK branch of Atari was run very differently by Daryl Still, and it's clear that working with the Jaguar meant a lot to him. "It was a real mixed bag of emotions, because the buzz was huge, the excitement terrific, but the frustration of not receiving inventory was soul destroying", he tells us. "There were some tremendously talented people there. Really committed people who just thrived upon working with great product, and there was no doubt that Jaguar was a potentially huge piece of hardware. We had total autonomy over how we ran things in Europe. The biggest problem was the US office couldn't see beyond their own markets and pretty much dominated the available inventory. This was a historical problem, dating back to the ST. If the US had learned from our [European success with the ST], and given us equal status with inventory and budget, I believe Atari could [have still been a] hardware force today. We produced some great hardware in those days, and backed them up with some super (and some less super) software

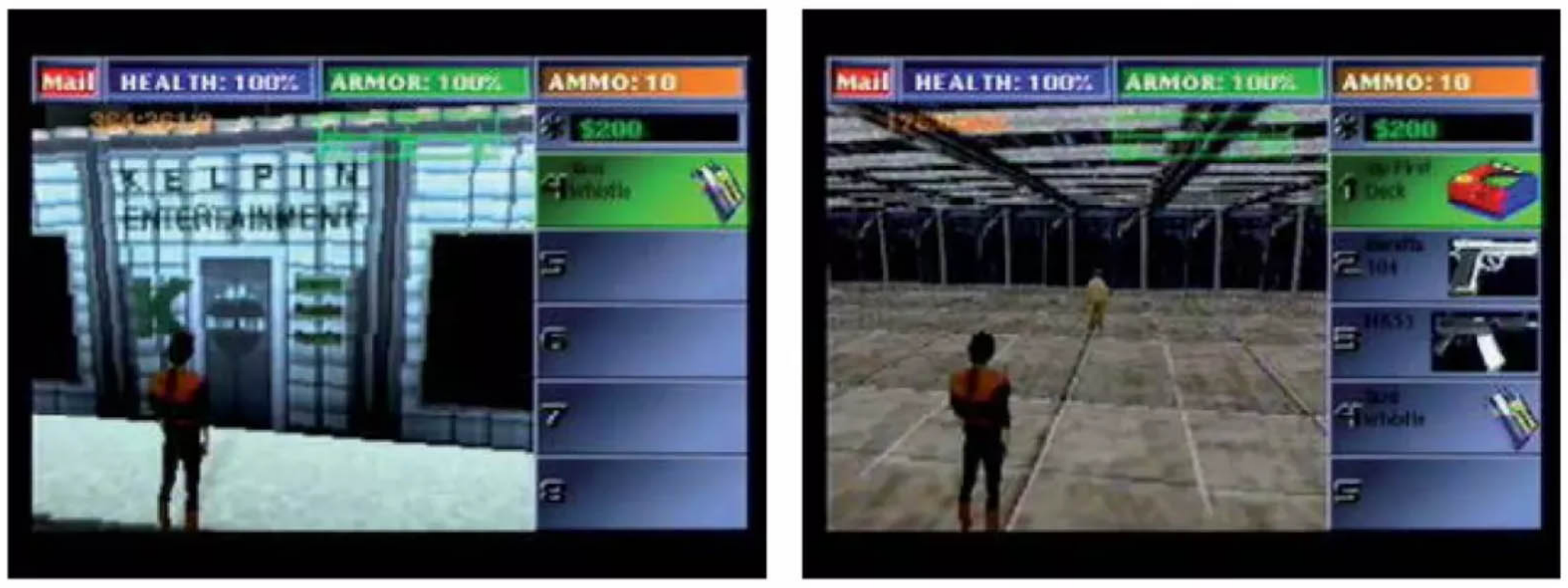
Just come JAGUAR
구세대 게임기는 가라! X세대 게임기 JAGUAR가 온다!!
가자! 꿈과 모험의 세계로
온몸으로 실감하는 3차원 그래픽
인터랙티브 멀티미디어 시스템
64비트 게임머신 재규어
10월 발매 결정

» For the Global Gaming fans: One of many two-page Jaguar adverts found in Korean magazines!

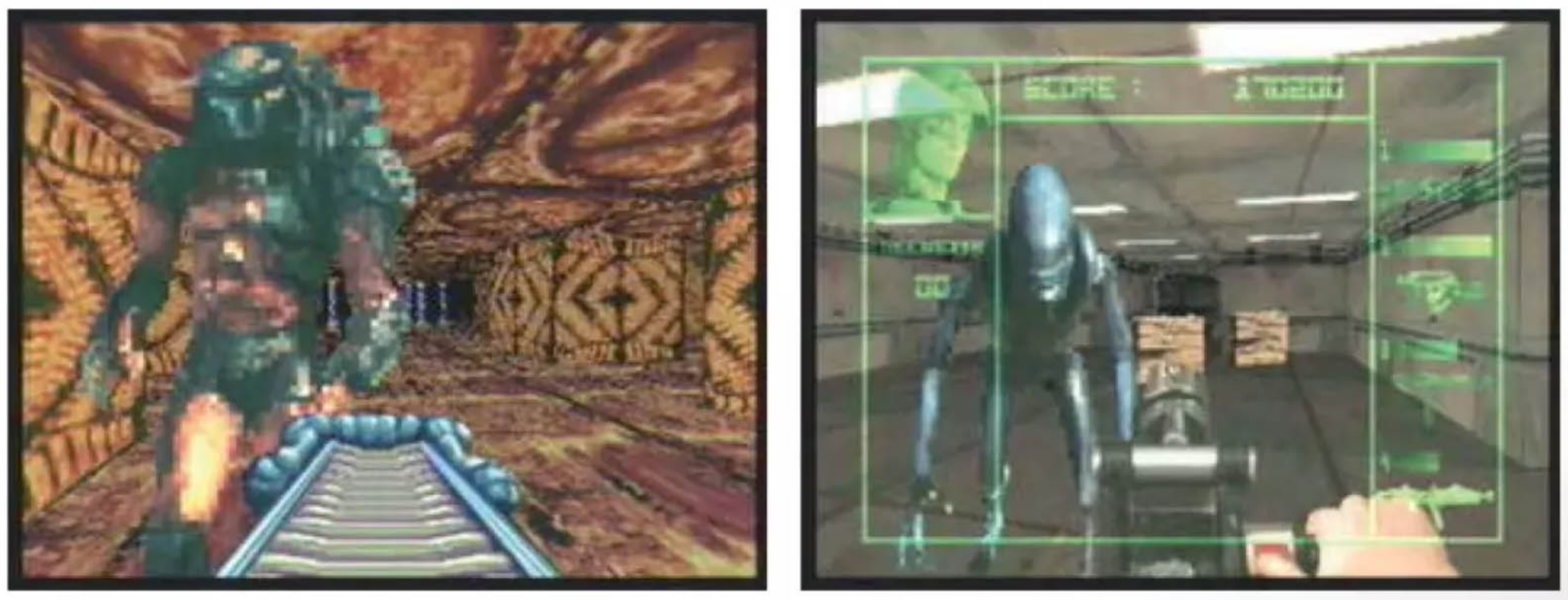


» Destroy entire cities with aplomb, in the German developed *Iron Soldier* – the sequel was later released on Jag CD.

» The Jamma Joystick, by Dan Loosen of goatstore.com, is just one of many hardware pieces designed, manufactured, and distributed by fans.



» Innovative and hugely anticipated, the eventually cancelled *Black Ice White Noise* would have played like a cross between *Shadowrun* and *GTA3*.



» *Alien Vs Predator* was the game that convinced many to buy the system. Even today it's still a supremely playable FPS.

JAGUAR 64-BIT
CANNON FODDER
DOOM
theme
DEFENDER
ATARI
ocean
£30.00
£39.99

» Information on dedicated Jaguar magazines is scant, but there were several inserts provided free with other mags.

EDGE
PRESENTED FREE WITH Ultimate
ATARI
Jaguar
ADVANCED GAMING
HERE COMES THE PREDATOR

titles, and I believe, by default, we set a number of practices that people like Sony learned from (both how to and how not to do things).”

Defence and Allure

At this point Karl Morris, who runs www.atari-explorer.com and went to great lengths aiding us with this article, speaks in Atari’s defence, while also providing scans of their financial documents on his website. “With respect to yet more Tramiel bashing, I hope this doesn’t seep into the article. Mistakes were made by Atari, but it was imperative the system launched in 1993. Atari pulled out all the stops to ensure Jaguar was a success. To say Atari was putting all its eggs into one basket is an understatement; Jaguar had to work or it was curtains for the company. To bash the management who were working on thin-air budgets with a one-way-ticket product is silly. Great people worked there and got behind the product 100%; they all knew what was at stake, and when it started to go wrong and the numbers weren’t adding up, and [Sam] had a heart attack, Jack came back and did what any sane person would do: protect his family’s interests. Lets not harp on about how “the Tramiels killed the Jaguar” when it was [they] who made it happen.”

“WITH A STRANGE SENSE OF BITTER IRONY, THE JAGUAR ONLY CAME TO LIFE AFTER ITS DEATH”

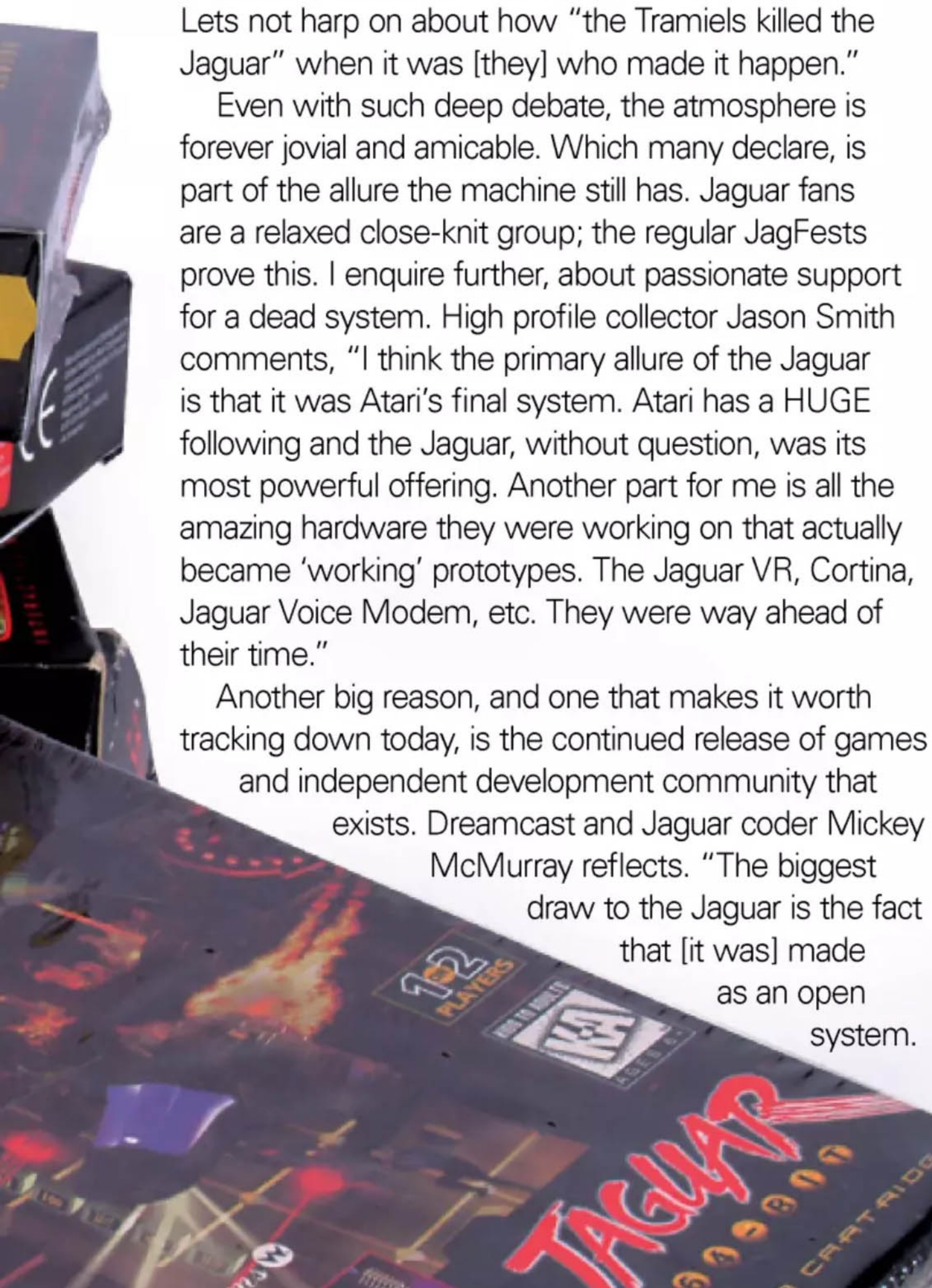
HOMEBREW KEEPS JAGUAR ALIVE

Even with such deep debate, the atmosphere is forever jovial and amicable. Which many declare, is part of the allure the machine still has. Jaguar fans are a relaxed close-knit group; the regular JagFests prove this. I enquire further, about passionate support for a dead system. High profile collector Jason Smith comments, “I think the primary allure of the Jaguar is that it was Atari’s final system. Atari has a HUGE following and the Jaguar, without question, was its most powerful offering. Another part for me is all the amazing hardware they were working on that actually became ‘working’ prototypes. The Jaguar VR, Cortina, Jaguar Voice Modem, etc. They were way ahead of their time.”

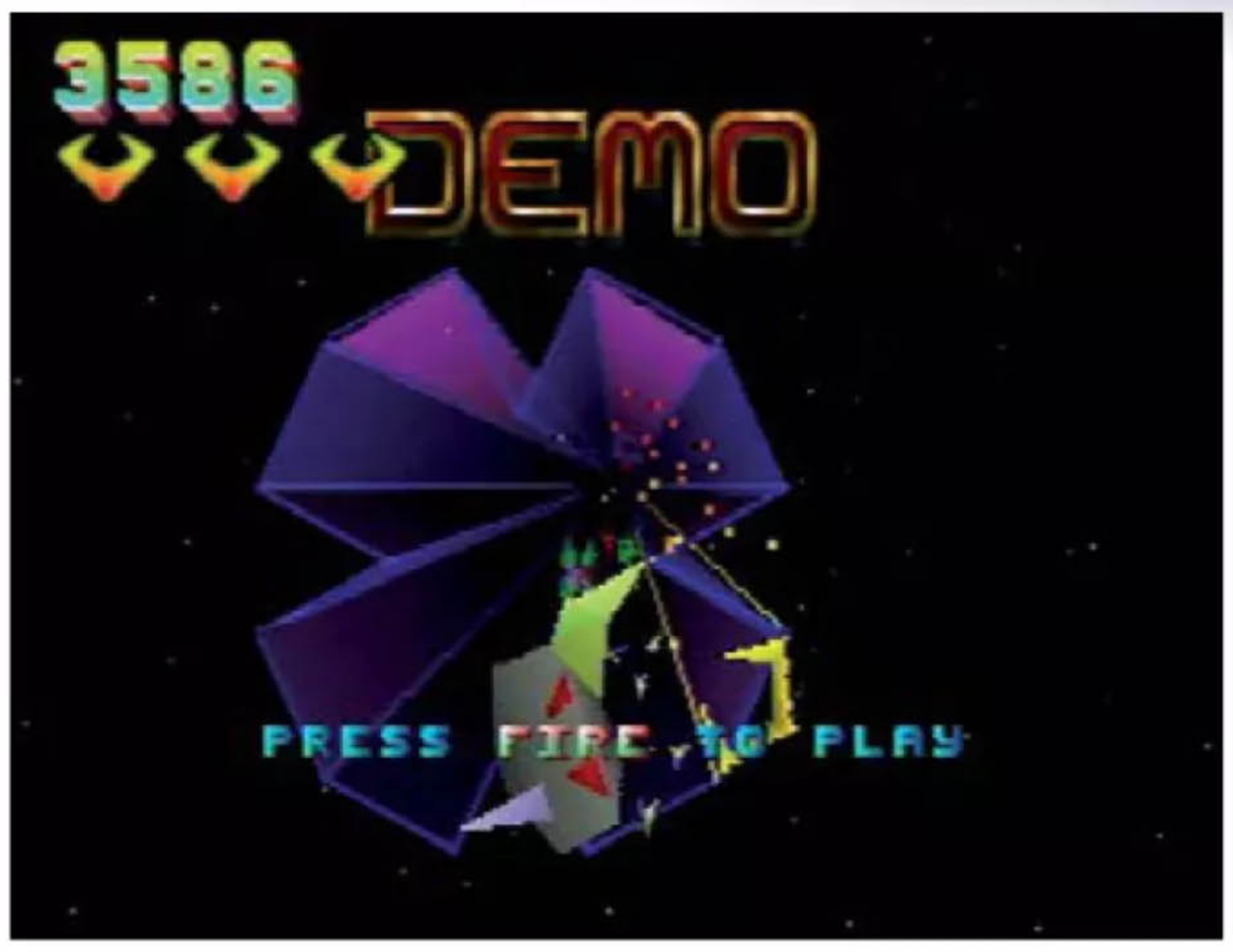
Another big reason, and one that makes it worth tracking down today, is the continued release of games and independent development community that exists. Dreamcast and Jaguar coder Mickey McMurray reflects. “The biggest draw to the Jaguar is the fact that [it was] made as an open system. The documentation, tools, and encryption keys are all available legally for anyone who wants them. Since the Jaguar is free for anyone to tinker with, people can release software, hardware modification and add-ons without fear of legal problems. The JagFests are very successful because of this; they have brand new games and hardware with which to keep Jaguar fans coming back.”

This raises a fascinating precedent, since in 1999 after petitioning, Hasbro Interactive officially, and commendably, released the rights to Jaguar. Something unthinkable to other hardware companies. More importantly the encryption keys to both cartridge and CD games were discovered by Curt Vendel of the Atari Museum, hidden on long-forgotten Atari floppies that were sold after the collapse. Now anyone can develop games, especially on CD, that will run on unmodified machines. This makes owning a Jag CD essential, as many modern releases are on disc.

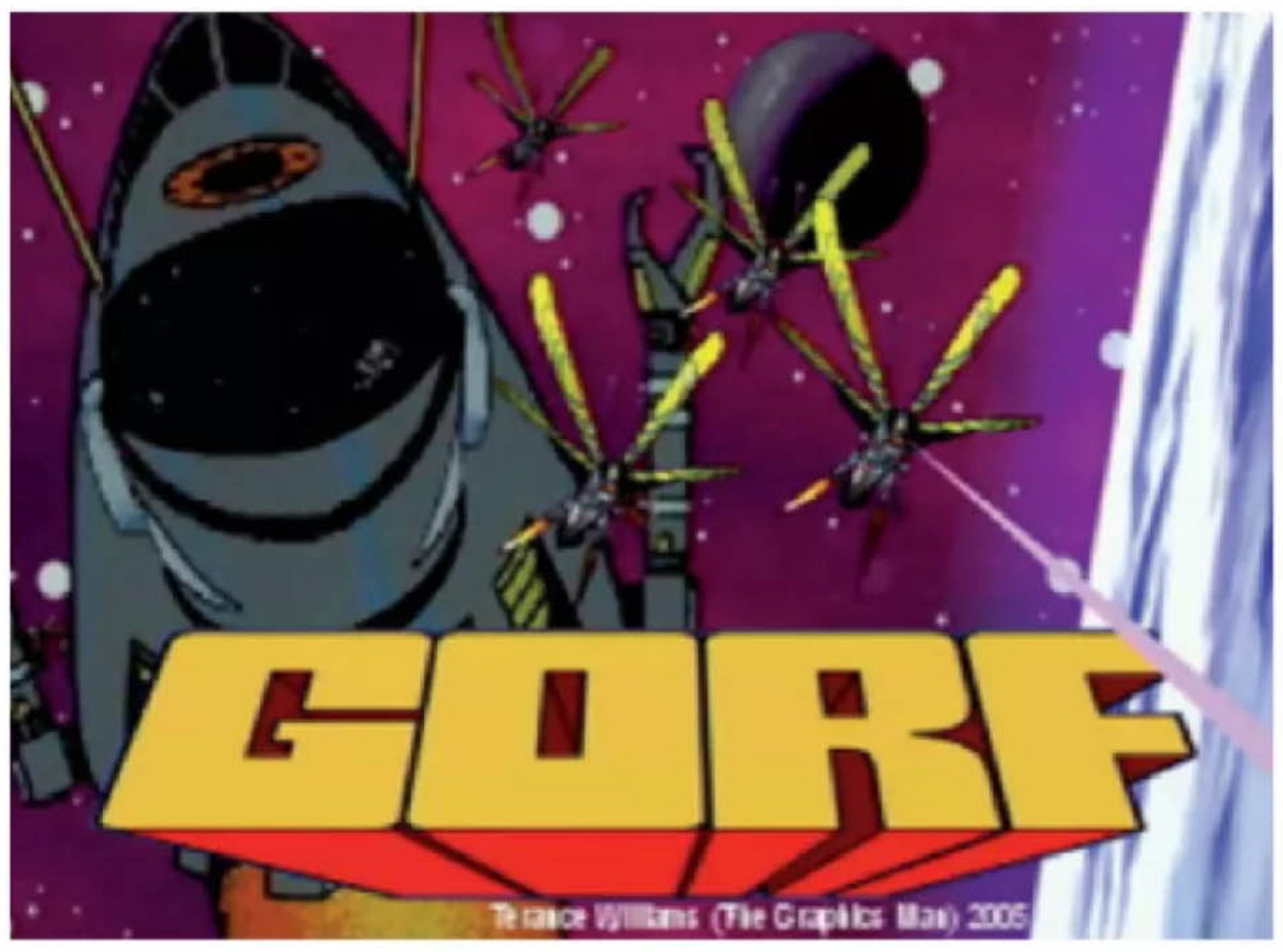
As well as coding their own projects and unlocking the system’s true power, the fans petitioned companies like Telegames to publish stillborn titles. During collapse Atari was sitting on dozens of fantastic, though sometimes only semi-complete games, many of which it’s argued would have saved Atari. With no licensing restrictions the community has been, and will continue, finishing these games themselves, then releasing them. Hence why some titles only came out in 2000 and beyond. With countless proto CDs in his possession, rather than hoarding them, Jason Smith set about making compilations and distributing them among fans. This is another highlight of the community; while unreleased Dreamcast prototypes bit-rot in the hands of private collectors, Jaguar fans, for the most part, happily share things. Which is why BIWN is freely available on the internet and why all profit made on Battlesphere was donated to charity. With so many developments that have happened in recent years, there has never been a better time to invest in a Jaguar. With a strange sense of bitter irony, the Jaguar only truly came to life after its death.



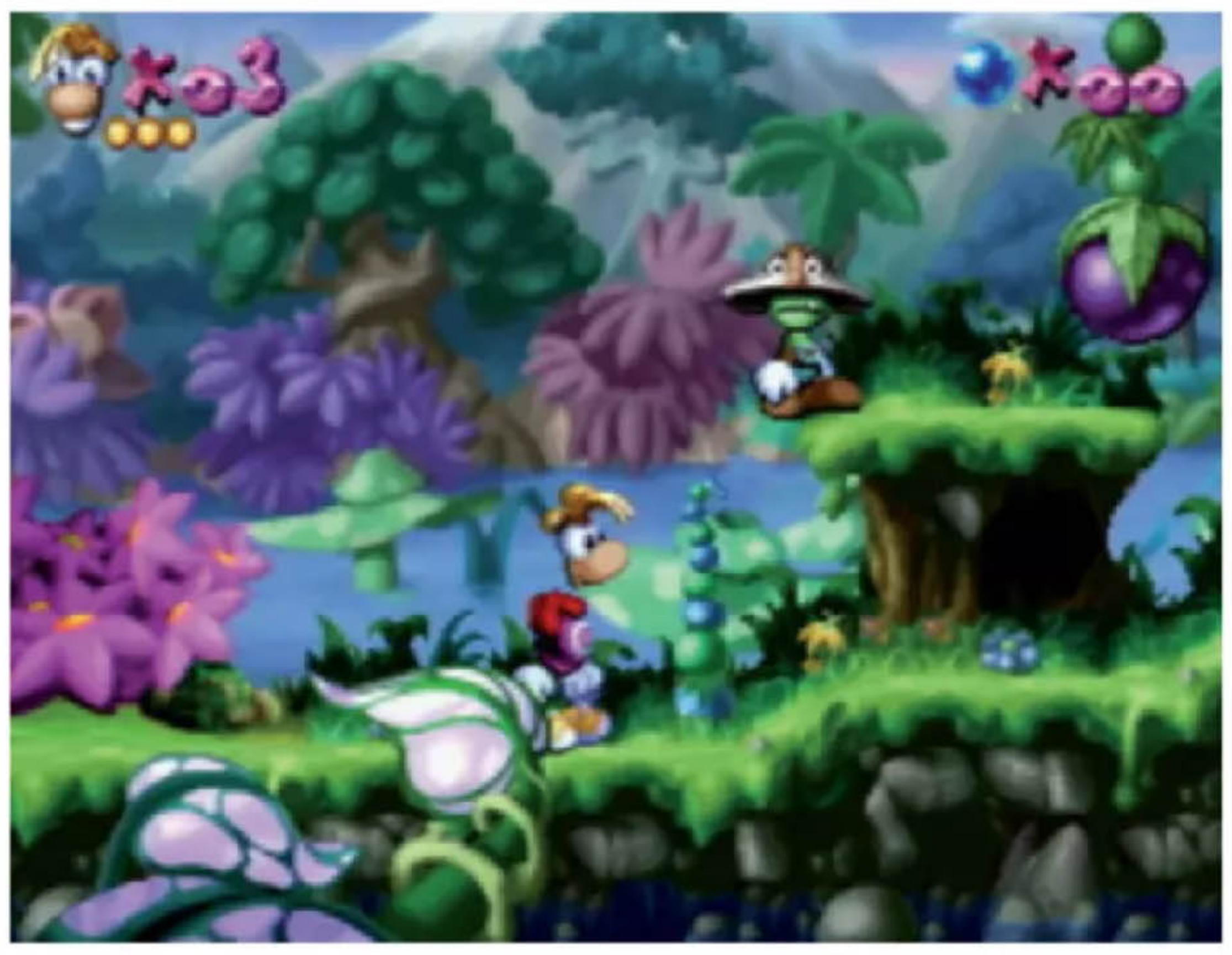
Special thanks to Jaguar Sector II and http://www.jaysmith2000.com/ for providing developers’ contacts. Thanks also to Karl Morris of www.atari-explorer.com and www.goatstore.com for assistance with this article.



» Along with *AVP*, Jeff Minter’s *Tempest 2000* is rightly heralded as one of the finest games on the Jaguar.



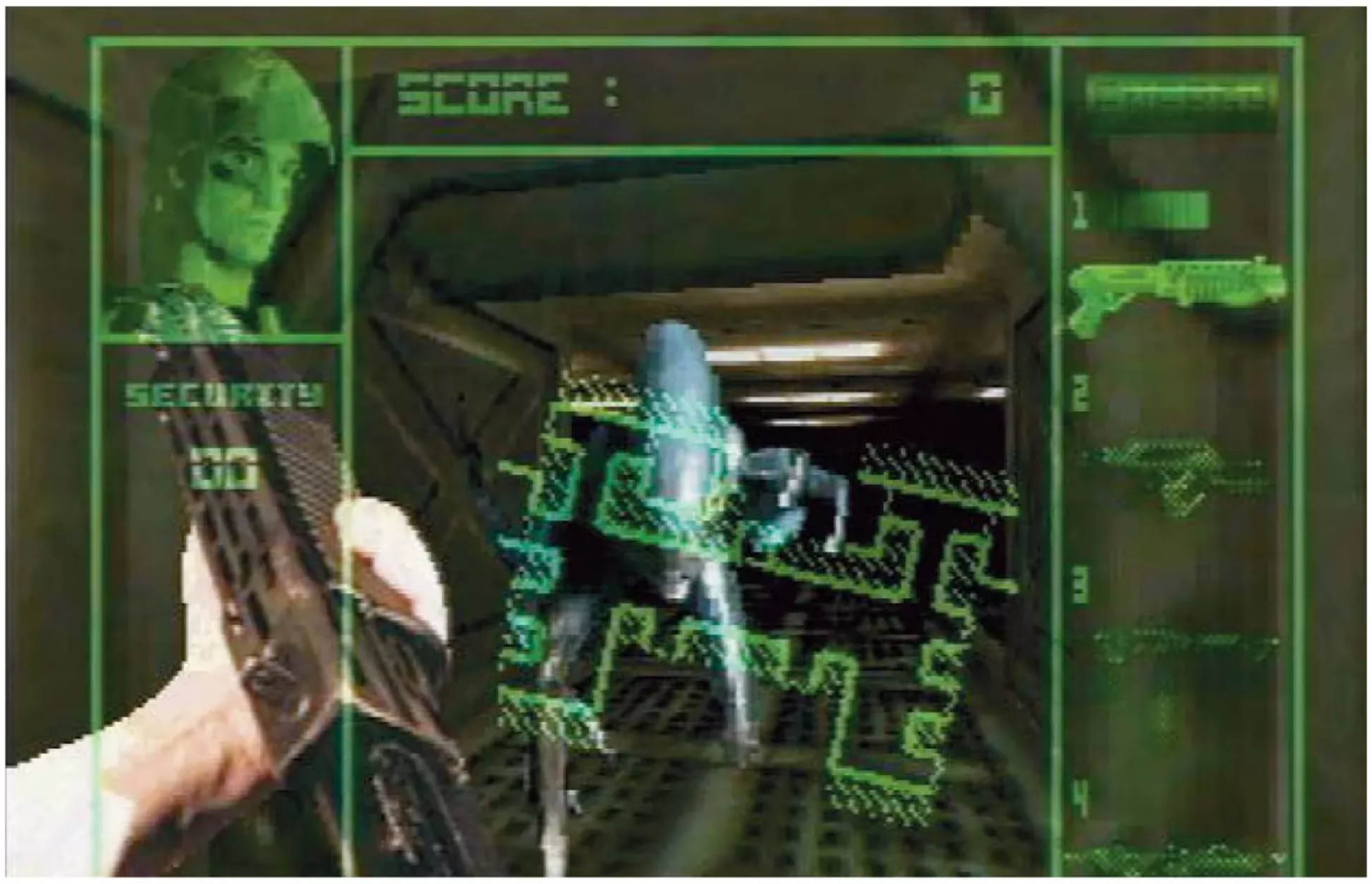
» Not only is the post-mortem-released *Gorf* for the Jag CD absolutely arcade perfect, but it helped re-invigorate the independent development scene.



» Ubisoft’s sumptuously wonderful *Rayman* game, which according to sources began life on Jaguar as a proposed exclusive.

ATARI JAGUAR: PERFECT 10 GAMES

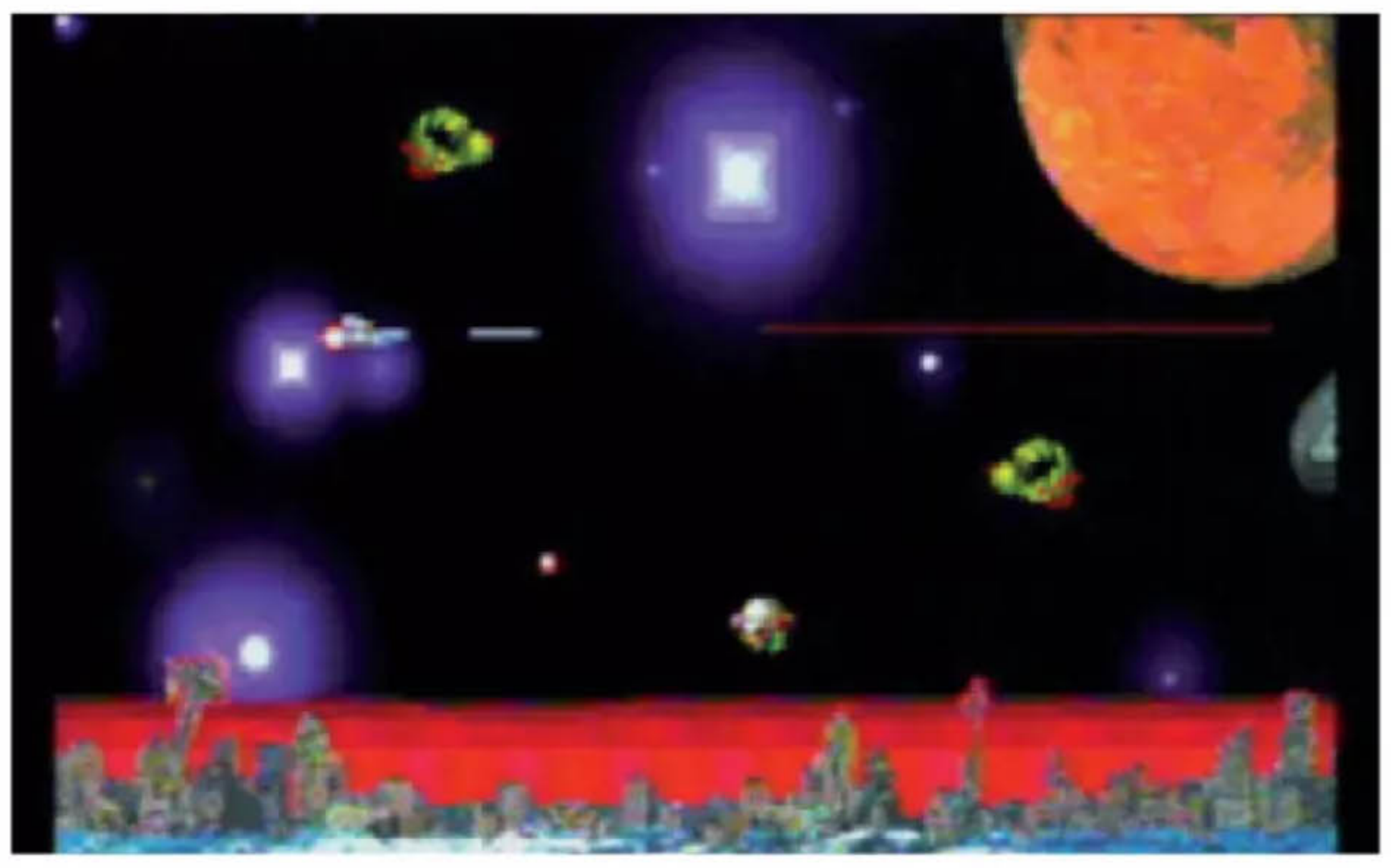
ATARI'S JAGUAR HAD SO MUCH UNTAPPED POTENTIAL THAT IT PAINS US TO SEE IT SO OPENLY SCORNED BY THE MAJORITY OF GAMERS NOWADAYS. FORGET THOSE FOOLS, AS WE REVEAL SOME OF THE SYSTEMS BEST GAMES



ALIEN VS PREDATOR

» RELEASED: 1994 » PUBLISHED BY: ATARI
» CREATED BY: REBELLION

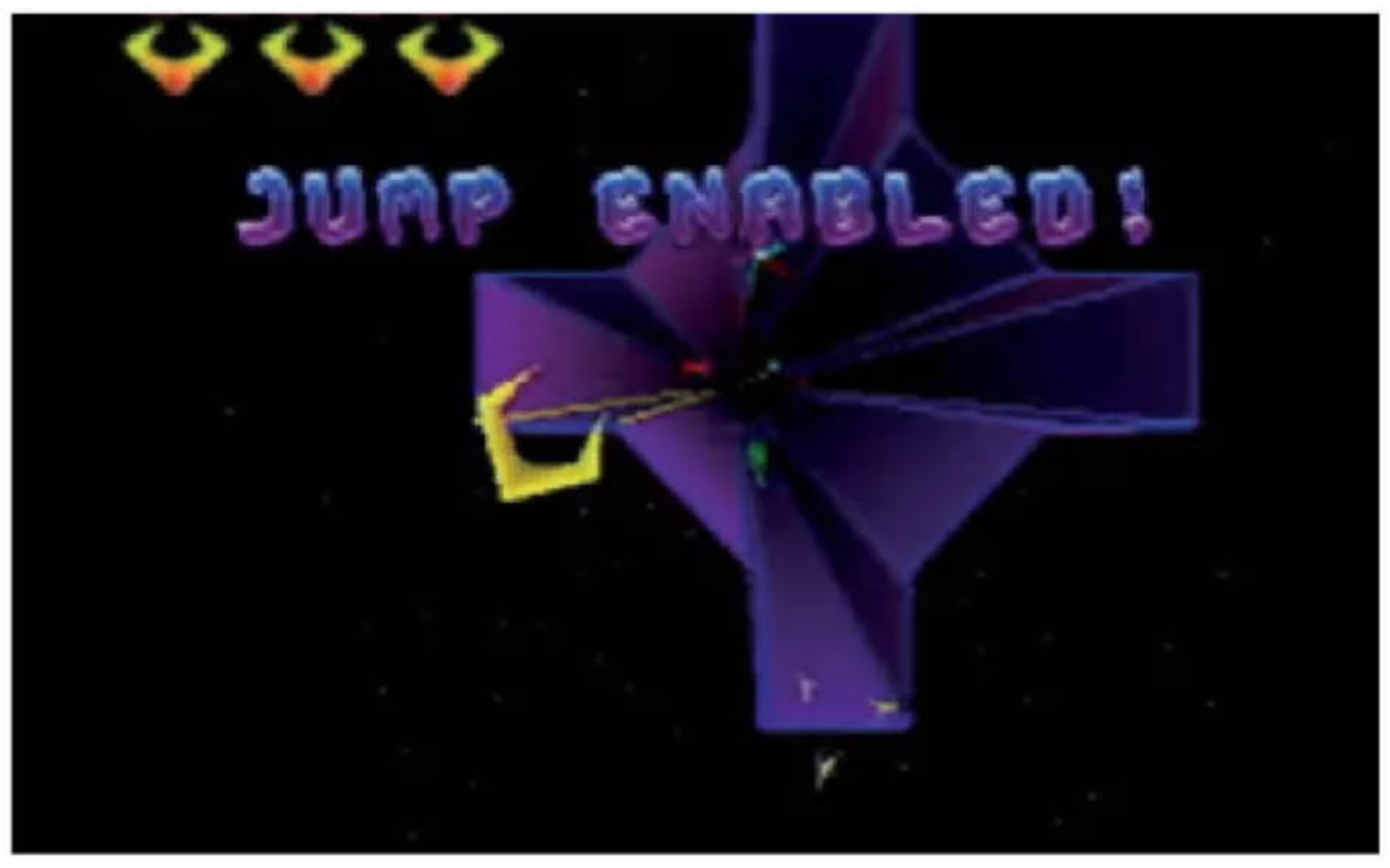
1 Never mind the fact that *Alien Vs Predator* was released a good year after being a supposed launch title, Rebellion's game was a landmark title for both the Jaguar and first-person shooters in general, thus making it more than worth the wait. While *AVP* boasted spectacular visuals it was the sound that truly impressed. With no music, creators Rebellion used a selection of screams, explosions and gunshots to punctuate the silence of each well-constructed stage. It was gameplay where *AVP* truly excelled though, and while the floaty controls could annoy, the three main protagonists – human, alien or predator – more than made up for it.



PROTECTOR SE

» RELEASED: 2002 » PUBLISHED BY: SONGBIRD PRODUCTIONS » CREATED BY: IN-HOUSE

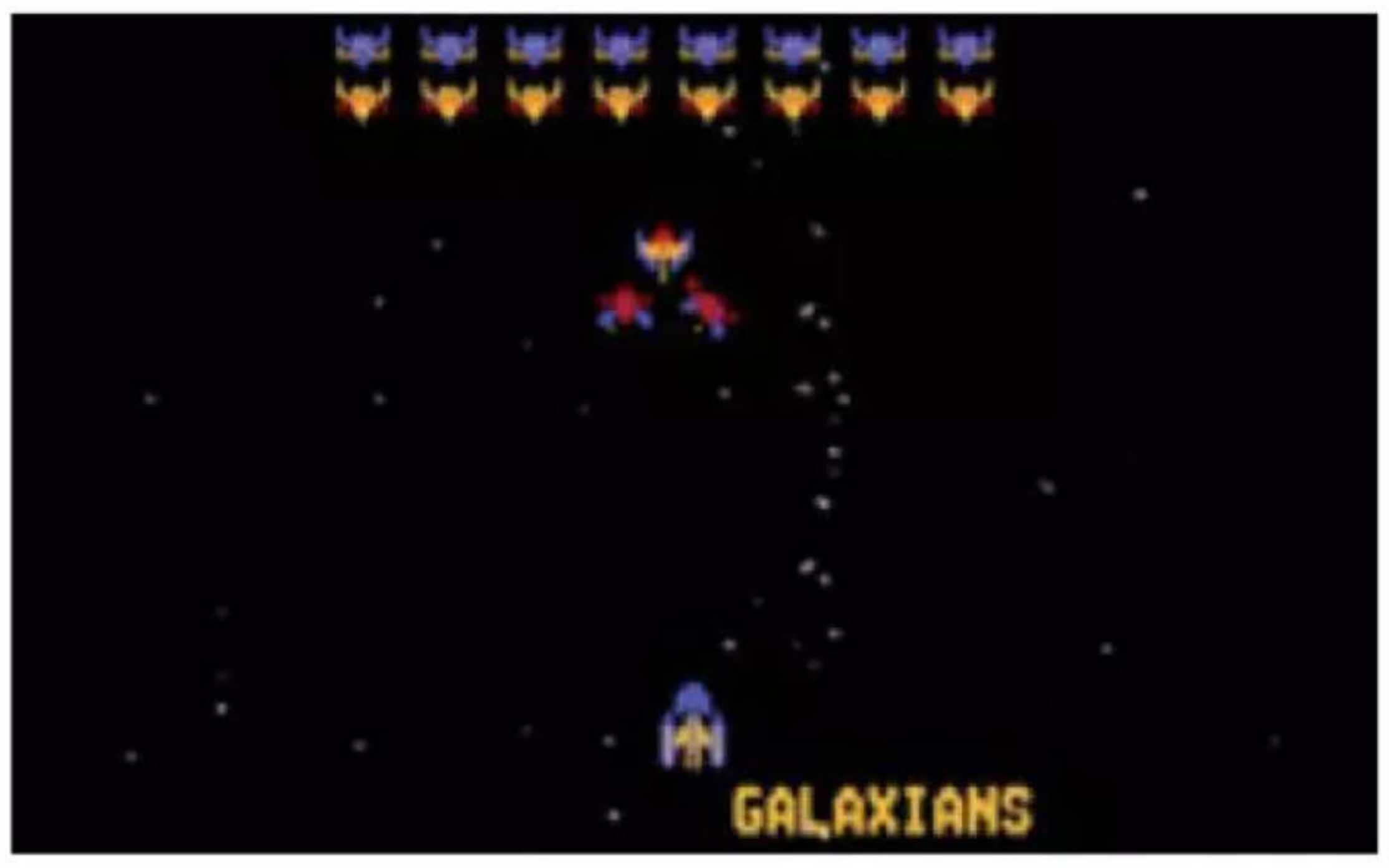
2 If you're looking for a superb update of *Defender,* it's this excellent offering from Songbird Productions that you should be searching out and not Jeff Minter's *Defender 2000.* The graphics truly are stunning and feature some of the best 2D visuals we've ever seen on Atari's 64-bit console, hell, any console from that period for that matter. Sound is also excellent, with a great array of sampled voices and some rocking tunes that perfectly capture the frantic on-screen action. Insanely fast, full of excitement and sporting some very nifty power-ups this is a perfect example of twitch gaming and deserves to be in every Jaguar owner's collection.



TEMPEST 2000

» RELEASED: 1994 » PUBLISHED BY: ATARI
» CREATED BY: JEFF MINTER

3 Jeff Minter's *Tempest 2000* is justification-enough for picking up Atari's ill-fated console. Beautiful to look at, incredible to listen to, witnessing *Tempest 2000* in action is the equivalent of having a synapse explode in your brain, such is the impact of Minter's masterpiece. Forget the incredibly poor port of the original arcade game that has been included and just concentrate on spending all your spare time with Tempest Duel; a gripping deathmatch for two players and of course, the stupendously good Tempest 2000. With new enemies, the ability to jump, scintillating sound and those eye-melting visuals this is perhaps Minter on his finest form.



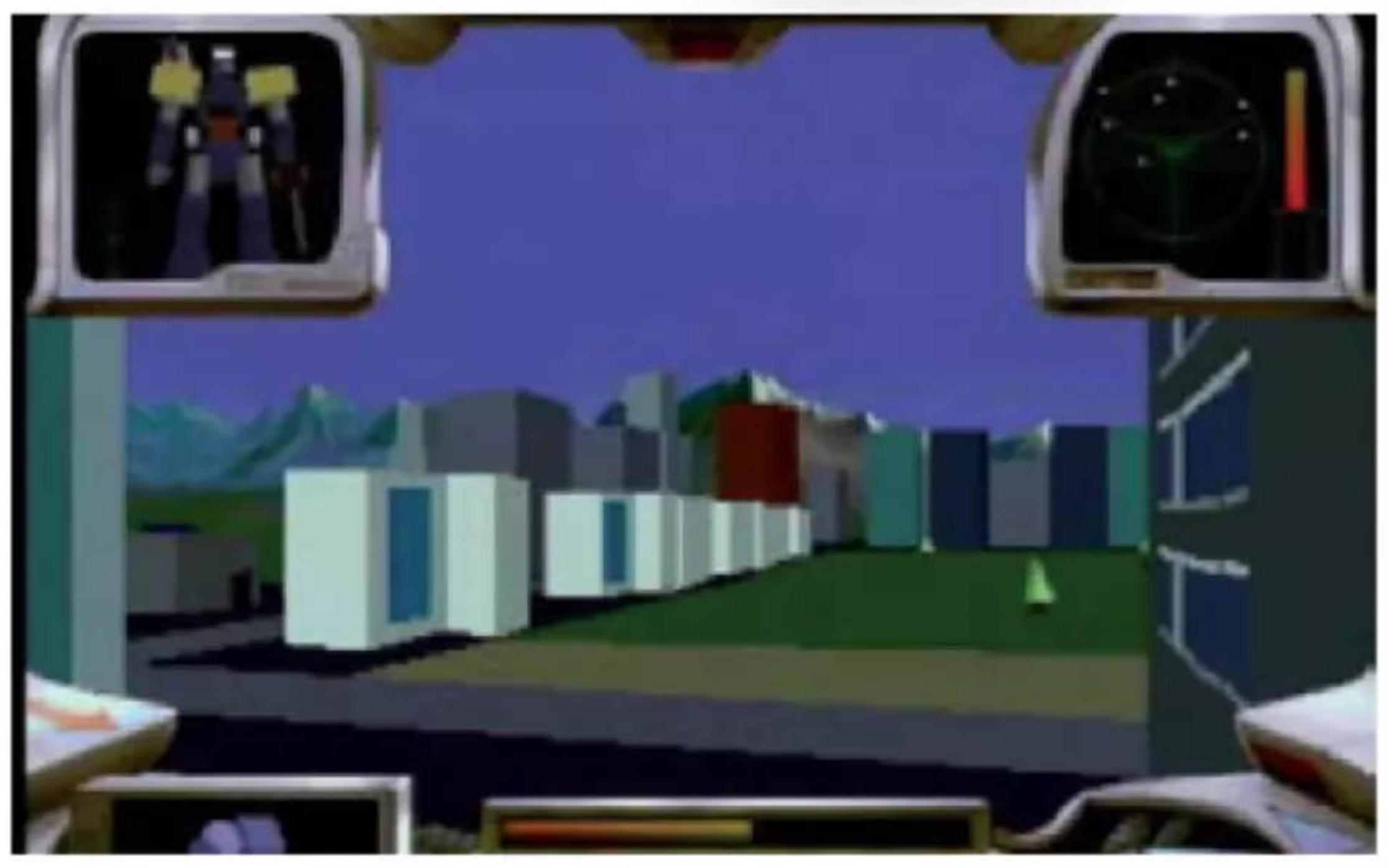
GORF CLASSIC (CD)

» RELEASED: 2006 » PUBLISHED BY: 3D STOOGES
» CREATED BY: JAMIE FENTON

4 The original arcade version of *Gorf* was developed by Jamie Fenton and released in 1981, featuring five progressive and very different levels, and also several digitised voice samples that heckled the player. The Jaguar CD port by 3D Stooges, which was created after the system's death and rekindled the development community, has the honour of being the only arcade perfect port to home systems that has all five of the original levels (due to licensing issues, the third *Galaxians* level was normally removed). Unfortunately, due to popularity and a low print run, this is now fairly rare and expensive on eBay, so you'll need a full wallet.

JAGUAR
ATARI
64-BIT INTERACTIVE MULTIMEDIA SYSTEM

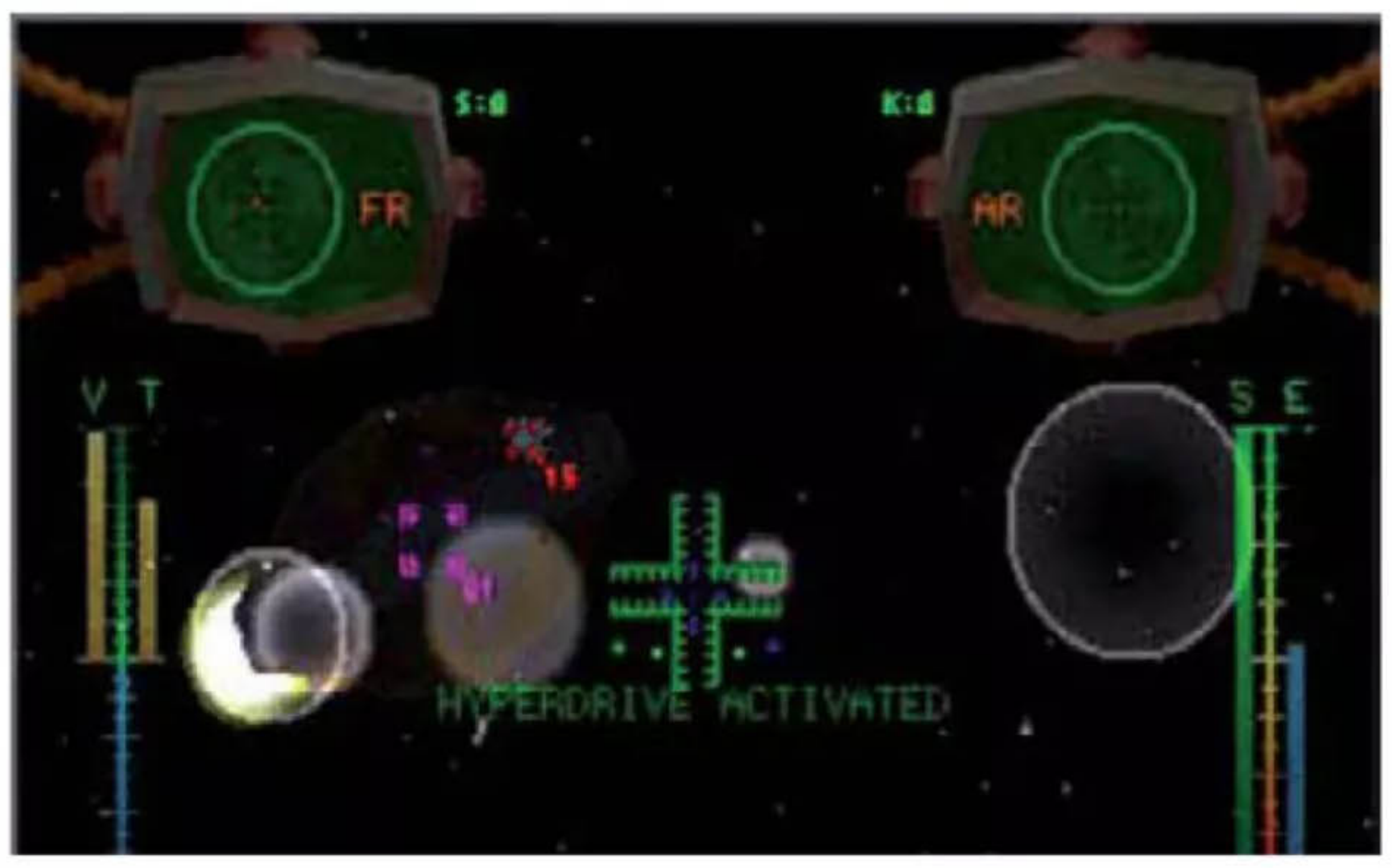
> “REBELLION’S GAME WAS A LANDMARK TITLE FOR BOTH THE ATARI JAGUAR AND FIRST-PERSON SHOOTERS IN GENERAL”
>
> PLAY ALIEN VS PREDATOR AS SOON AS POSSIBLE



IRON SOLDIER 1/II

» RELEASED: 1982 » PUBLISHED BY: ATARI/ TELEGAMES » CREATED BY: ECLIPSE SOFTWARE

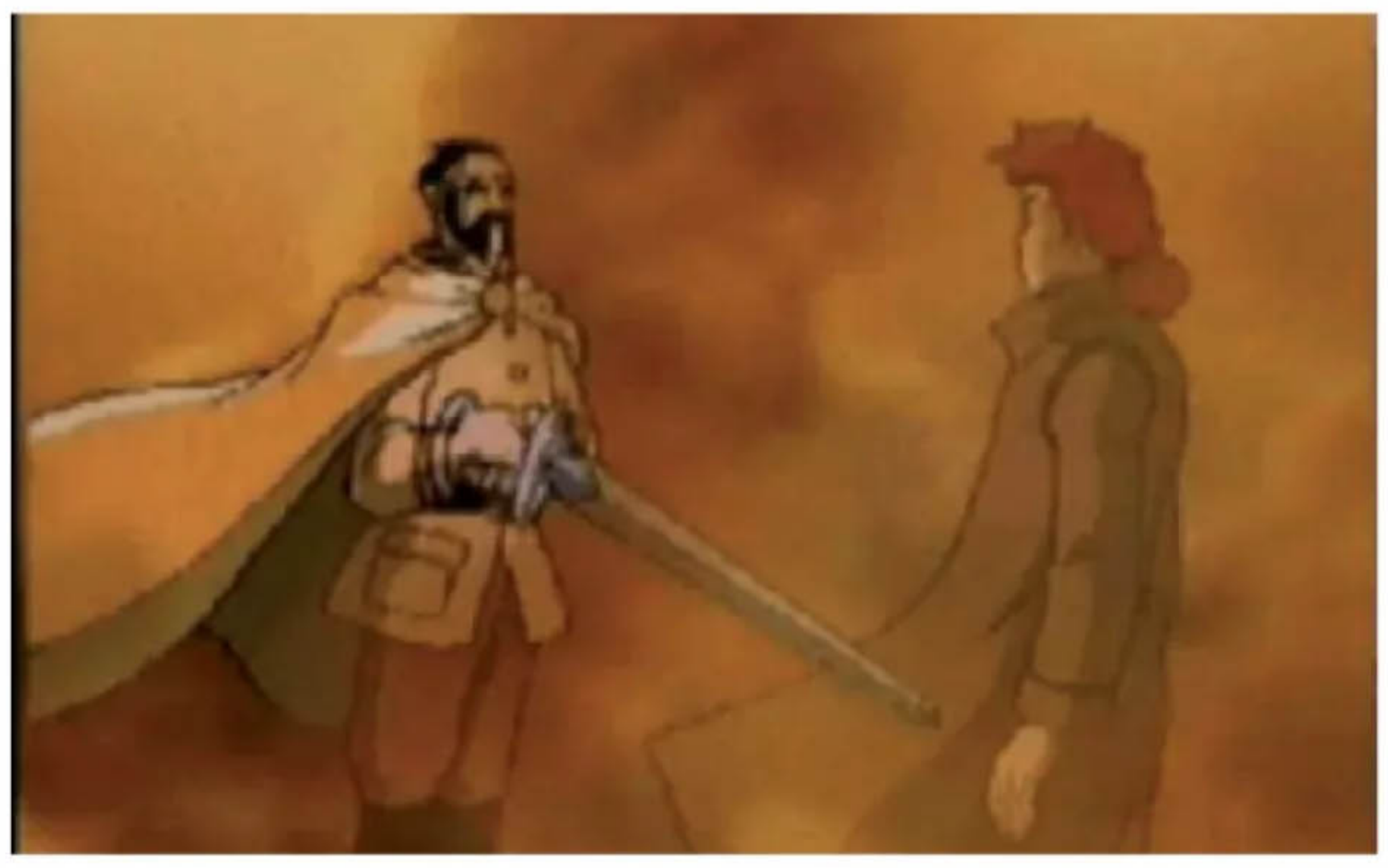
5 We’re mentioning both *Iron Soldier 1* and *II* as they’re perfect examples of what the Jaguar and Jaguar CD could do in capable hands. Both titles require you to storm around in a huge mech and lay waste to whatever is foolish (or unfortunate) enough to get in your way. Each game feature expansive environments (although the CD version has greatly improved visuals and a storming soundtrack) a variety of well-structured missions and some of the most amazing explosions in any Jaguar game. Some may baulk at the slow pace of both games, but with so much to learn you’ll actually be glad you have some time to think.



BATTLESPHERE

» RELEASED: 2000 » PUBLISHED BY: SCATOLOGIC INC » CREATED BY: 4PLAY

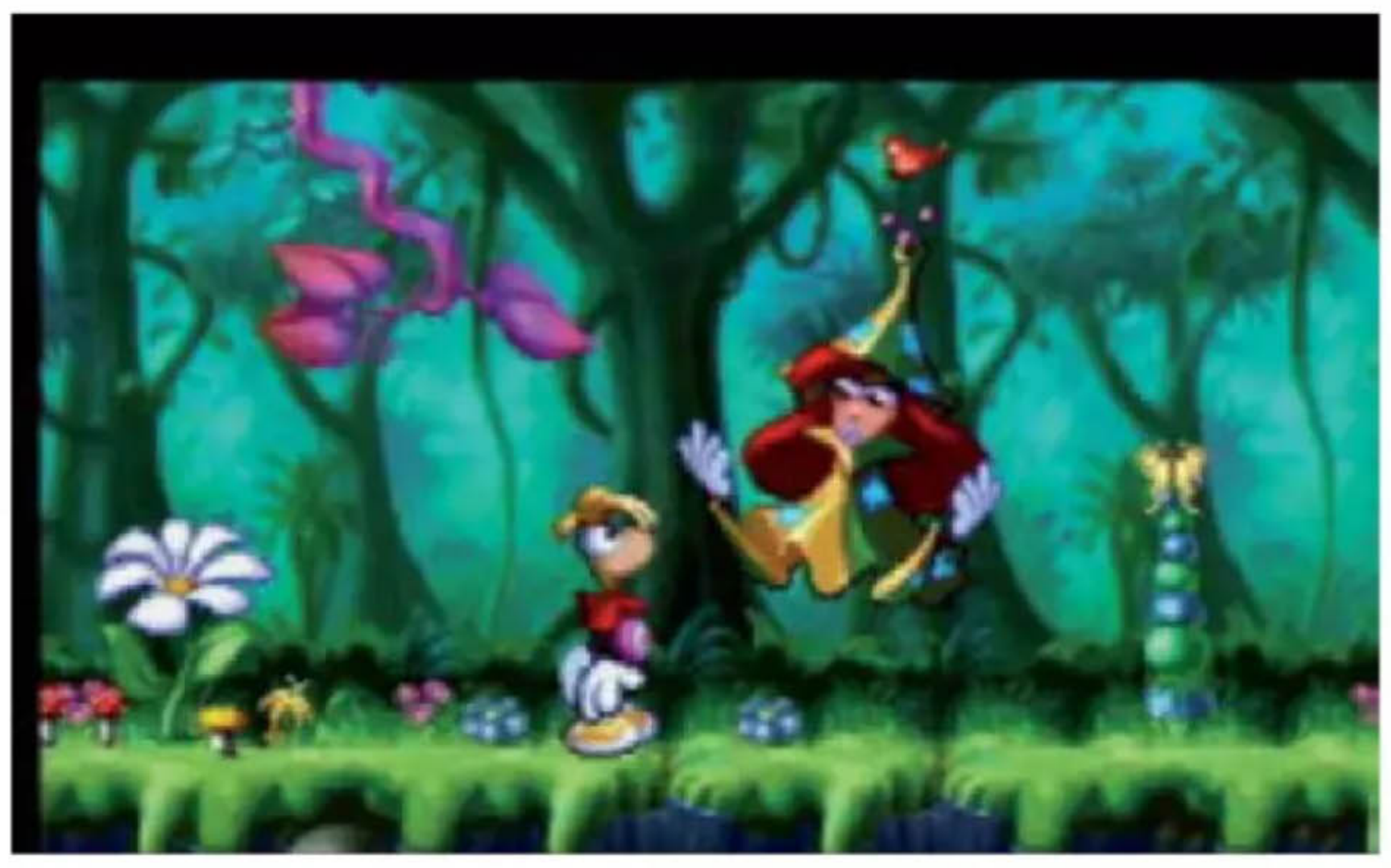
6 The epic space opera *BattleSphere* (both normal and enhanced Gold versions) is a triumphant example of what the Jaguar is truly capable of. Filled with clever references to popular sci-fi creations, you choose one of seven known intergalactic races (including humans), before being placed in a fully 3D sphere of space and battling it out to become champion. Visually nothing short of stunning, the dynamic AI also impresses, and for a time was unsurpassed. It’s also one of the few games that supports up to 32 simultaneous human players over a network (although you’re going to have to find a convention in order to experience this.



HIGHLANDER (CD)

» RELEASED: 1995 » PUBLISHED BY: ATARI » CREATED BY: LORE DESIGN LIMITED

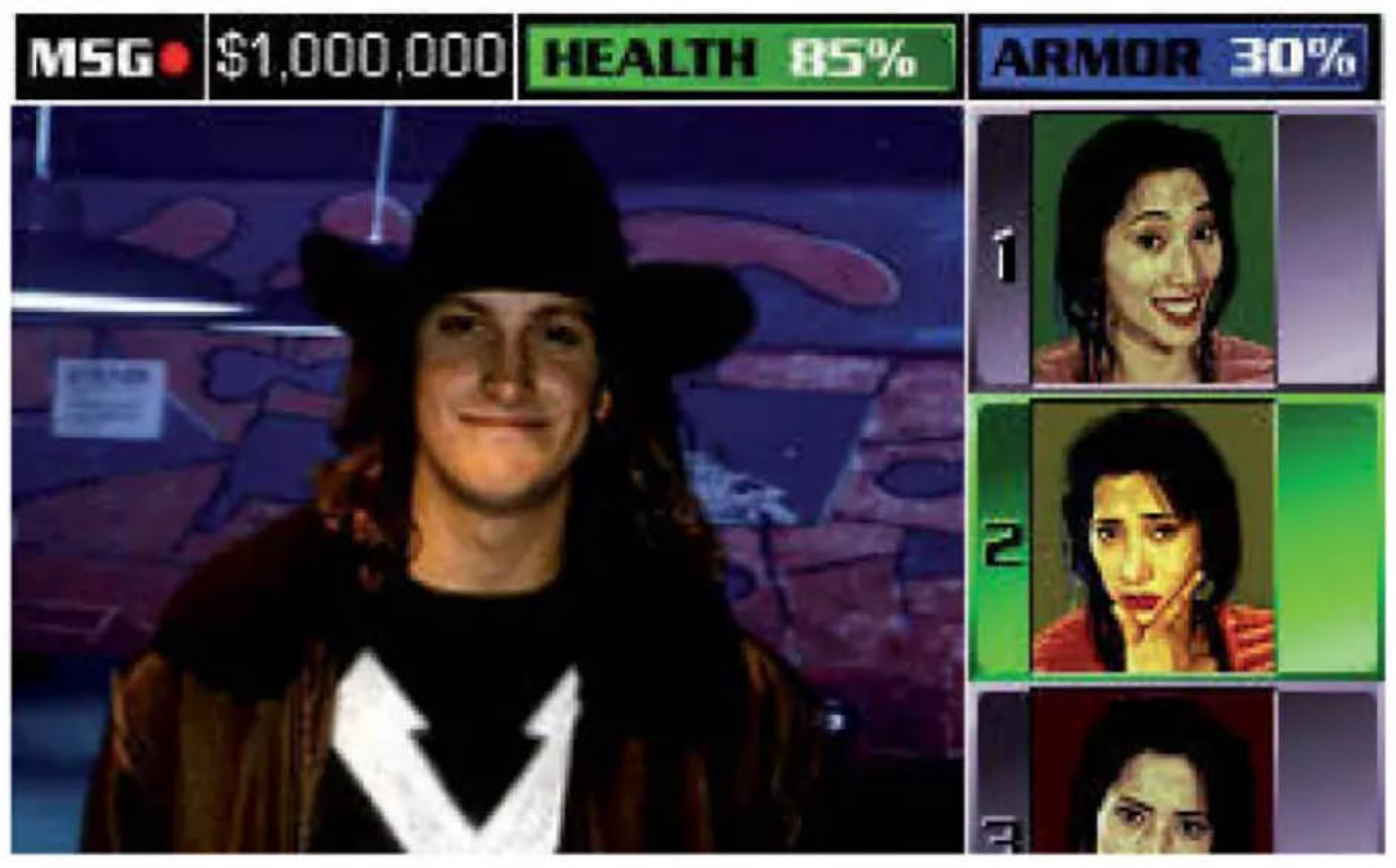
7 The Jaguar and CD add-on were starved of traditional adventures and RPGs (the only other notable exception being *Towers II*). So adventures like *Highlander*, which was exclusive to the system, is something to get very excited about indeed. Based not on the film’s franchise (which was killed by three totally unnecessay sequels) but rather the animated TV series, you play Quentin MacLeod on his quest against rogue immortal Kortan. Controls are comparable to *Resident Evil*; you’re able to defeat enemies using fists, sword or a gun, while searching for items that allow progress. A unique and enjoyable title that’s worth tracking down.



RAYMAN

» RELEASED: 1995 » PUBLISHED BY: UBISOFT » CREATED BY: IN-HOUSE

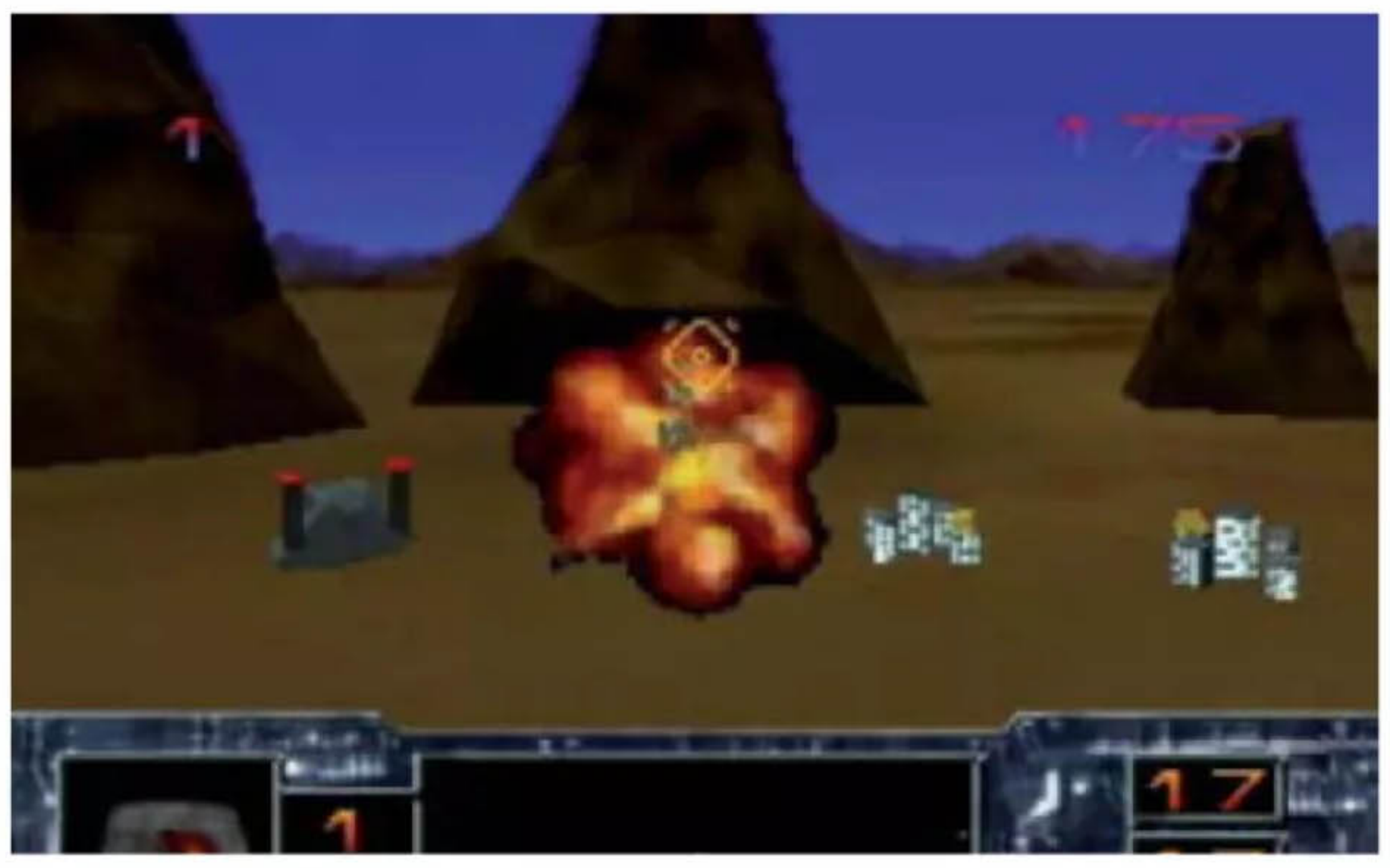
8 Decent platformers are few and far between on Atari’s Jaguar, so when a title with the quality of *Rayman* comes along you can’t really afford to miss it. Originally created exclusively for Atari’s machine (it was later ported to the PlayStation and other consoles like the Saturn) Michael Ancel’s platformer still looks sumptuous and boasts some utterly stunning locations. Filled with layer upon layer of parallax scrolling and beautiful, hand-drawn sprites it’s an amazing technical achievement and perfectly shows off previous claims about the Jaguar’s 2D power. Despite *Rayman’s* toughness there’s no denying it’s a charming game.



BLACK ICE/WHITE NOISE

» RELEASED: 2004 » FREELY RELEASED BY: BEEJ WEST (DEVELOPER) » CREATED BY: ATARI

9 Black Ice/White Noise was not officially released due to being cancelled before completion; but since it was such an ambitious title and because the beta can be freely downloaded online, we thought it must be mentioned, as its history alone warrants several articles. The team had a unique vision which today is comparable to a cross between *Shadowrun* without magic and *GTA3*. Players would have been able to traverse a massive cityscape while completing missions, riding vehicles, shooting police, hacking computer networks, talking with NPCs, etc. Sadly, among other things, overly high ambitions killed the project.



MISSILE COMMAND 3D

» RELEASED: 1995 » PUBLISHED BY: ATARI » CREATED BY: VIRTUALITY

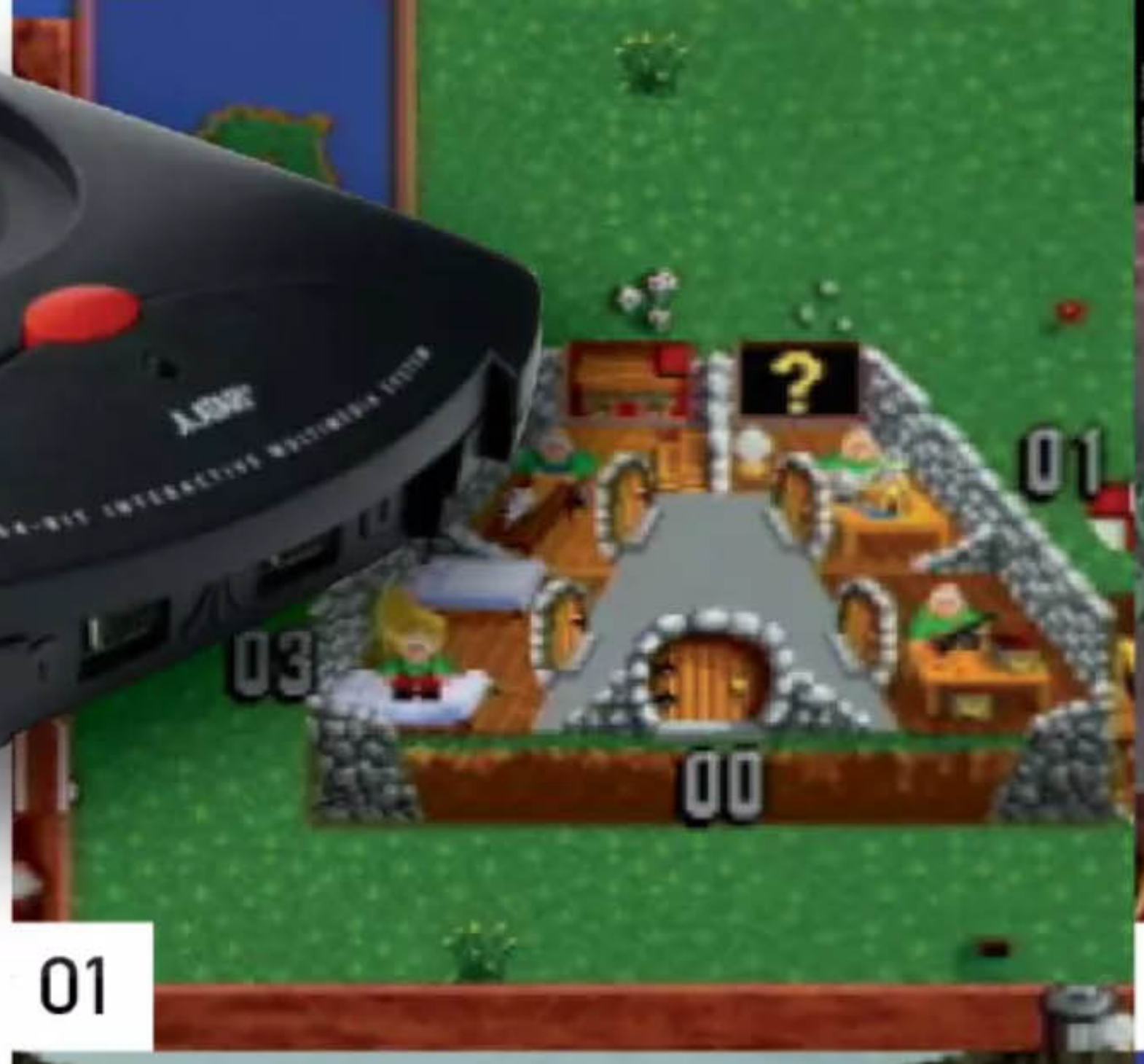
10 Despite the Jaguar’s VR Headset never getting released, Atari still saw fit to release *Missile Command 3D*, which featured a VR version of the game few Jaguar owners will have been able to play. Apart from this obvious oversight the VR version in particular is great fun to play and gives you a clear example of just how immersive the game would have actually been. Starting off in an underwater base, you’ll soon progress above ground and into space itself. All the while missiles are furiously raining down on you and despite the first-person viewpoint it perfectly captures the essence of the original game, which is also included.

ATARI JAGUAR

AND THE REST...

While you had to look very hard for them, Atari's Jaguar did boast some solid titles. Many of them are now extremely difficult to track down and can fetch a pretty penny on eBay. See how many titles you recognise...

01 Baldies
02 Pinball Fantasies
03 Troy Aikman Nfl Football
04 Highlander
05 Attack Of The Mutant Penguins
06 International Sensible Soccer
07 Iron Soldier
08 Total Carnage
09 Kasumi Ninja
10 Doom
11 Missile Command 3d
12 Tempest 2000
13 Hyper Force
14 Atari Karts
15 Flashback
16 Nba Jam: Tournament Edition
17 White Men Can't Jump
18 Soccer Kid
19 Braindead 13
20 Cybermorph (2meg)
21 Pitfall: The Mayan Adventure
22 Syndicate
23 Double Dragon
24 Myst
25 World Tour Racing
26 Club Drive
27 Fight For Life
28 Protector
29 Wolfenstein 3d
30 Cannon Fodder
31 Alien Vs Predator
32 Trevor Mcfur In The Crescent Galaxy
33 Iron Soldier 2
34 Speedster 2
35 Busby: Fractured Furry Tails
36 Evolution: Dino Dudes
37 Hover Strike
38 Ocean Depths
39 Flip Out
40 Fever Pitch Soccer
41 Skyhammer
42 Power Drive Rally
43 Towers Ii
44 Rayman
45 Space War 2000
46 Vid Grid
47 Dragon's Lair
48 Air Cars
49 Raiden
50 I-War
51 Theme Park
52 Super Burnout
53 Zool 2
54 Chequered Flag
55 Ruiner Pinball
56 Worms
57 Defender 2000
58 Space Ace
59 Zero 5
60 Battlemorph
61 Gorf Classic
62 Jagmind: Bomb Squad
63 Ultra Vortek
Screenshots courtesy of www.atariage.com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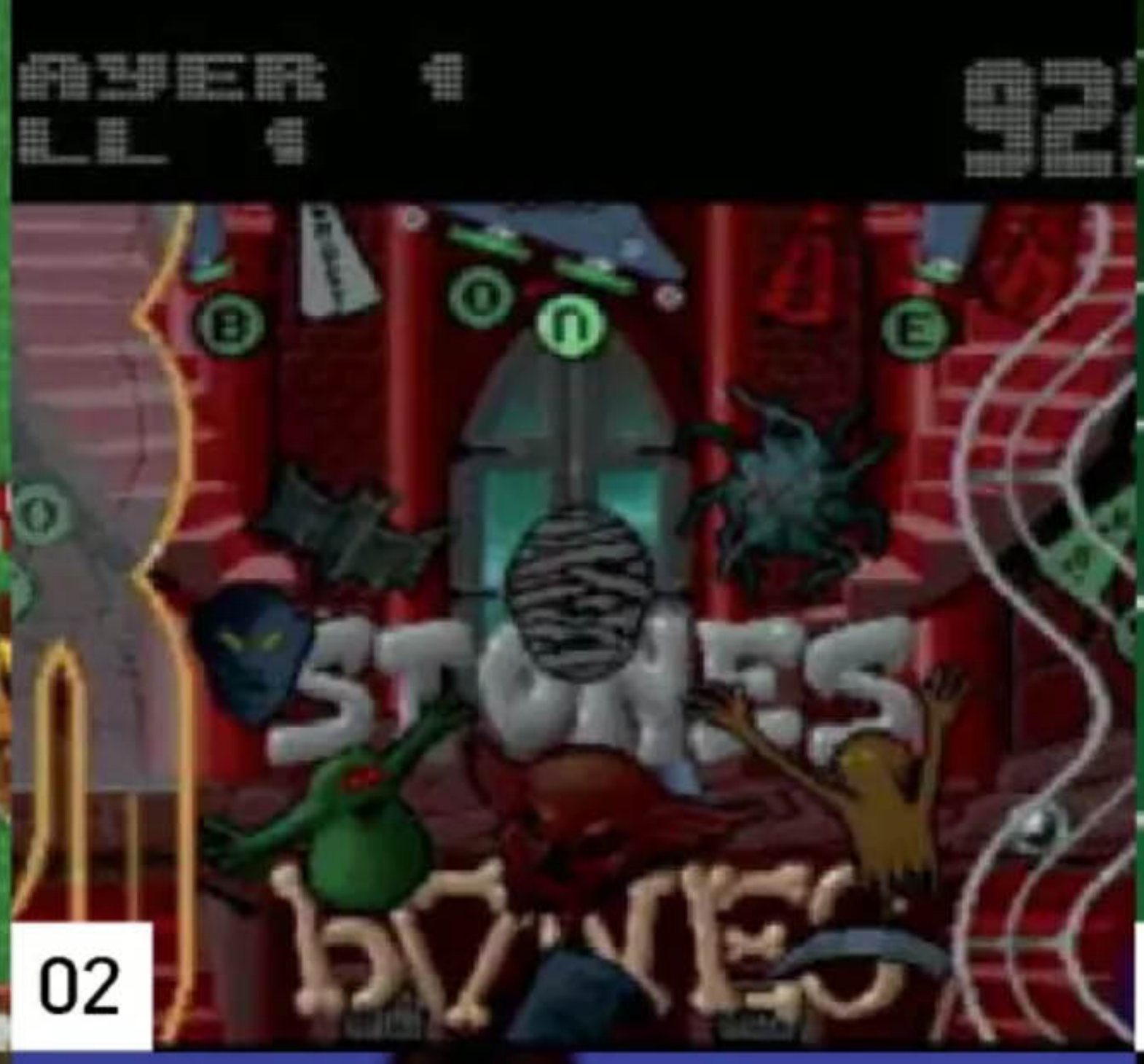
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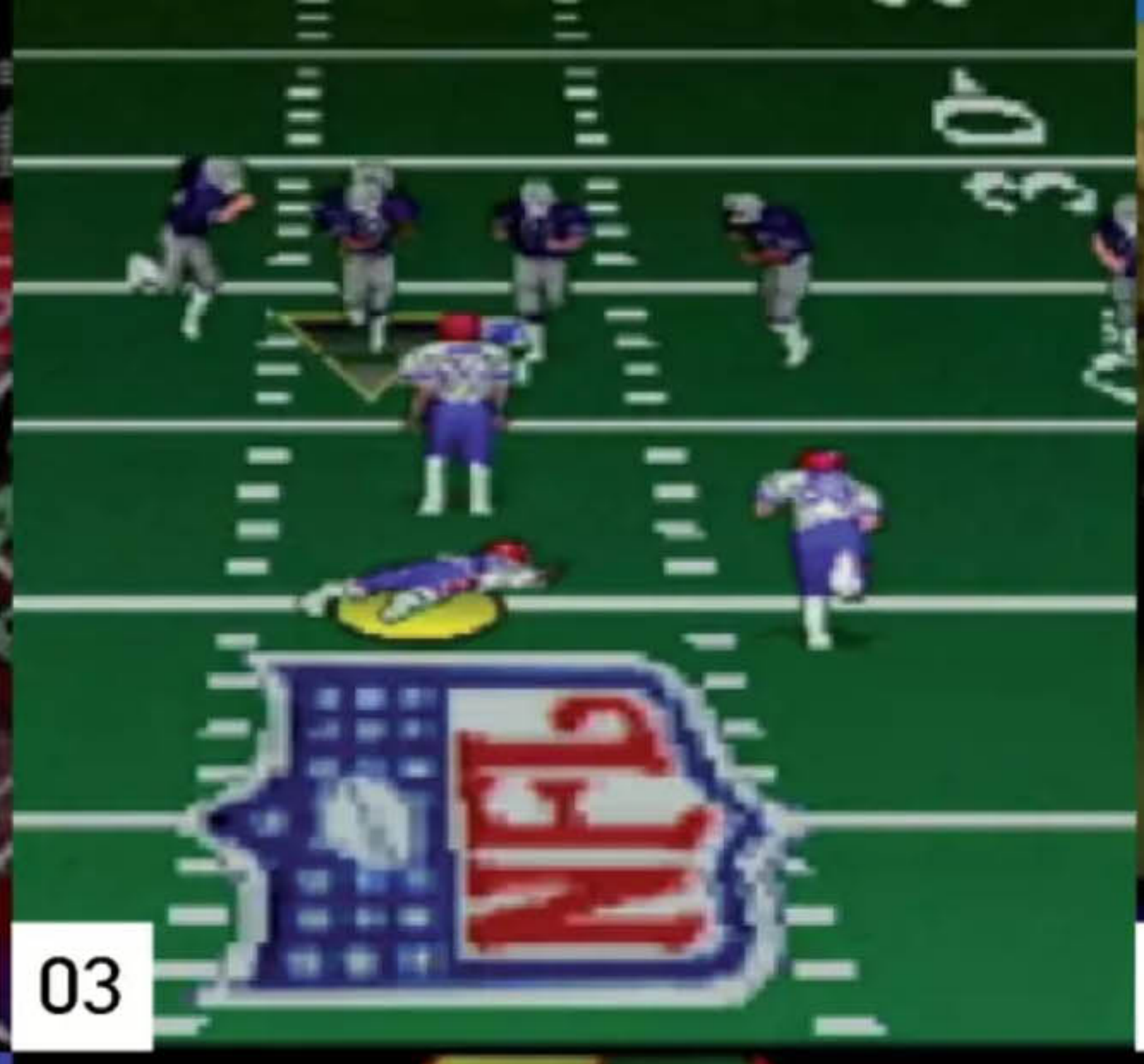
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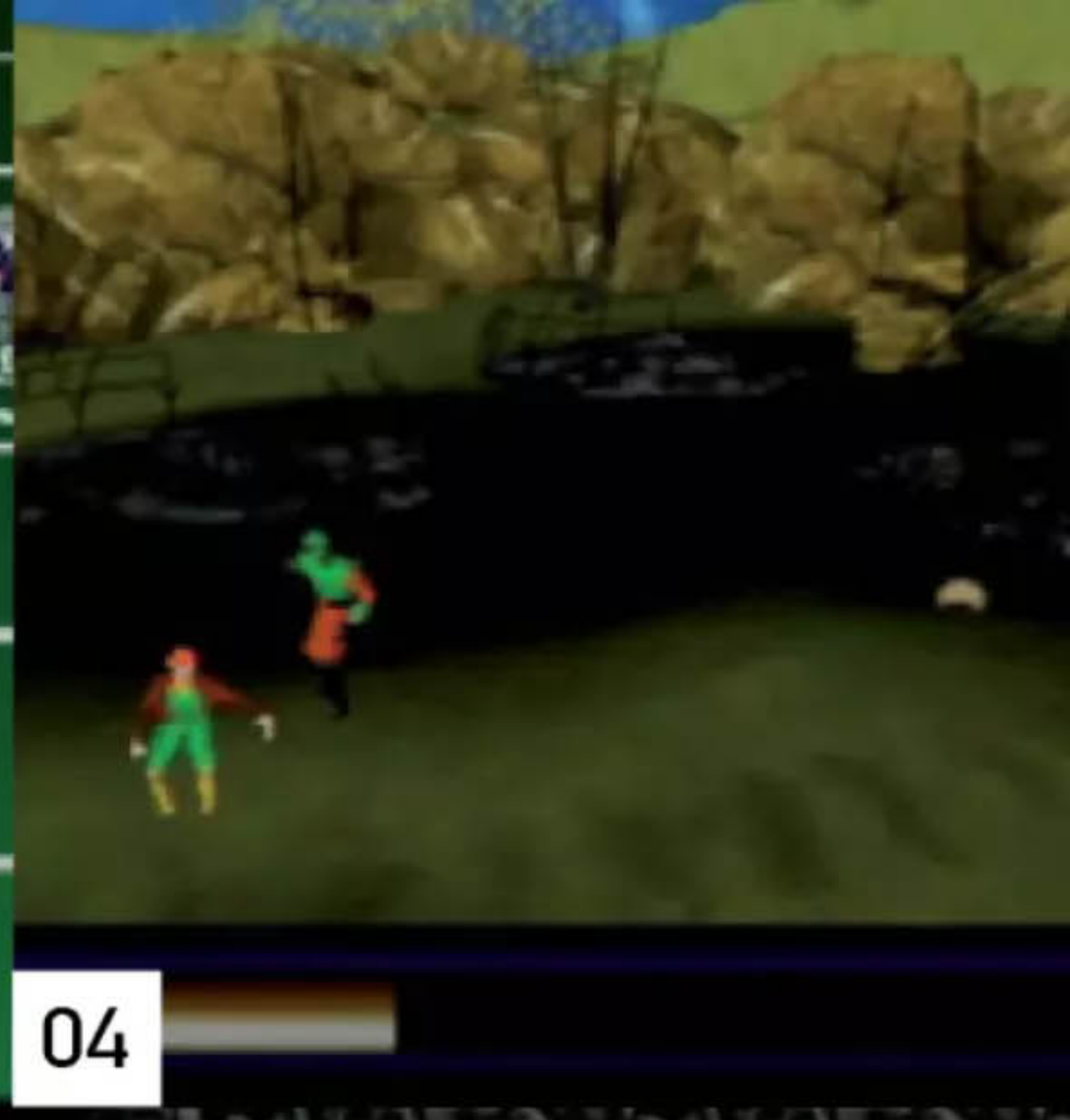
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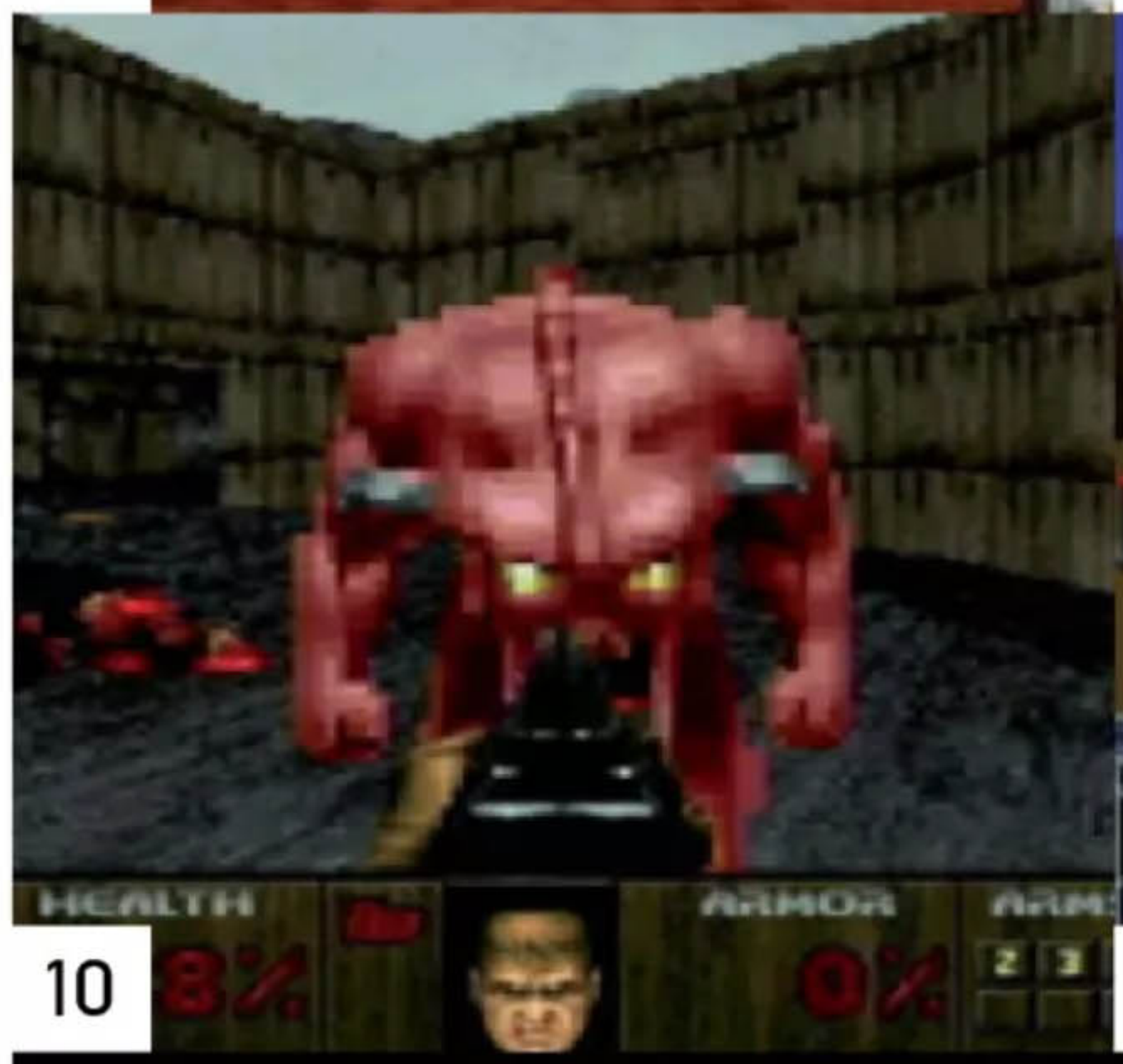
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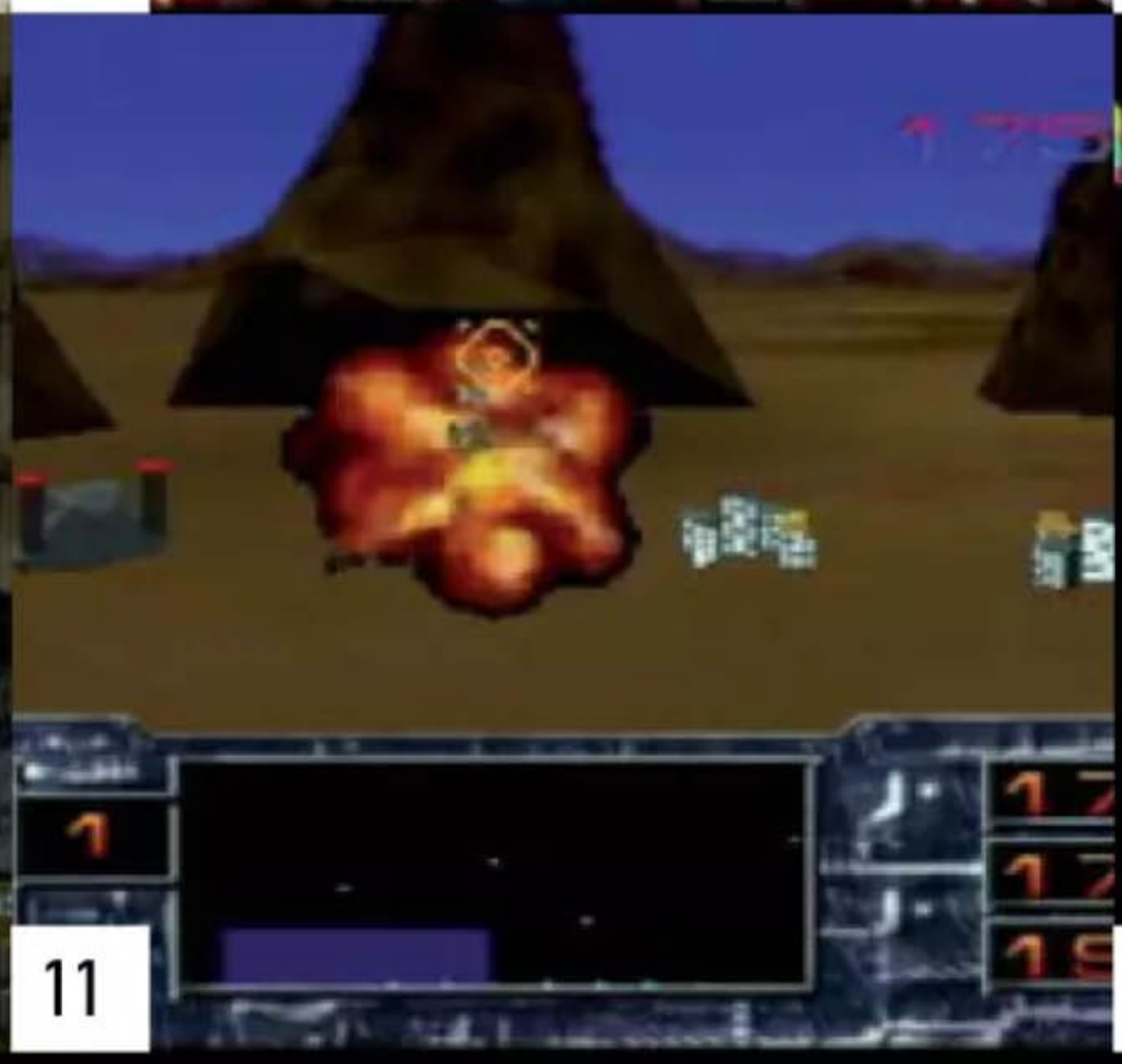
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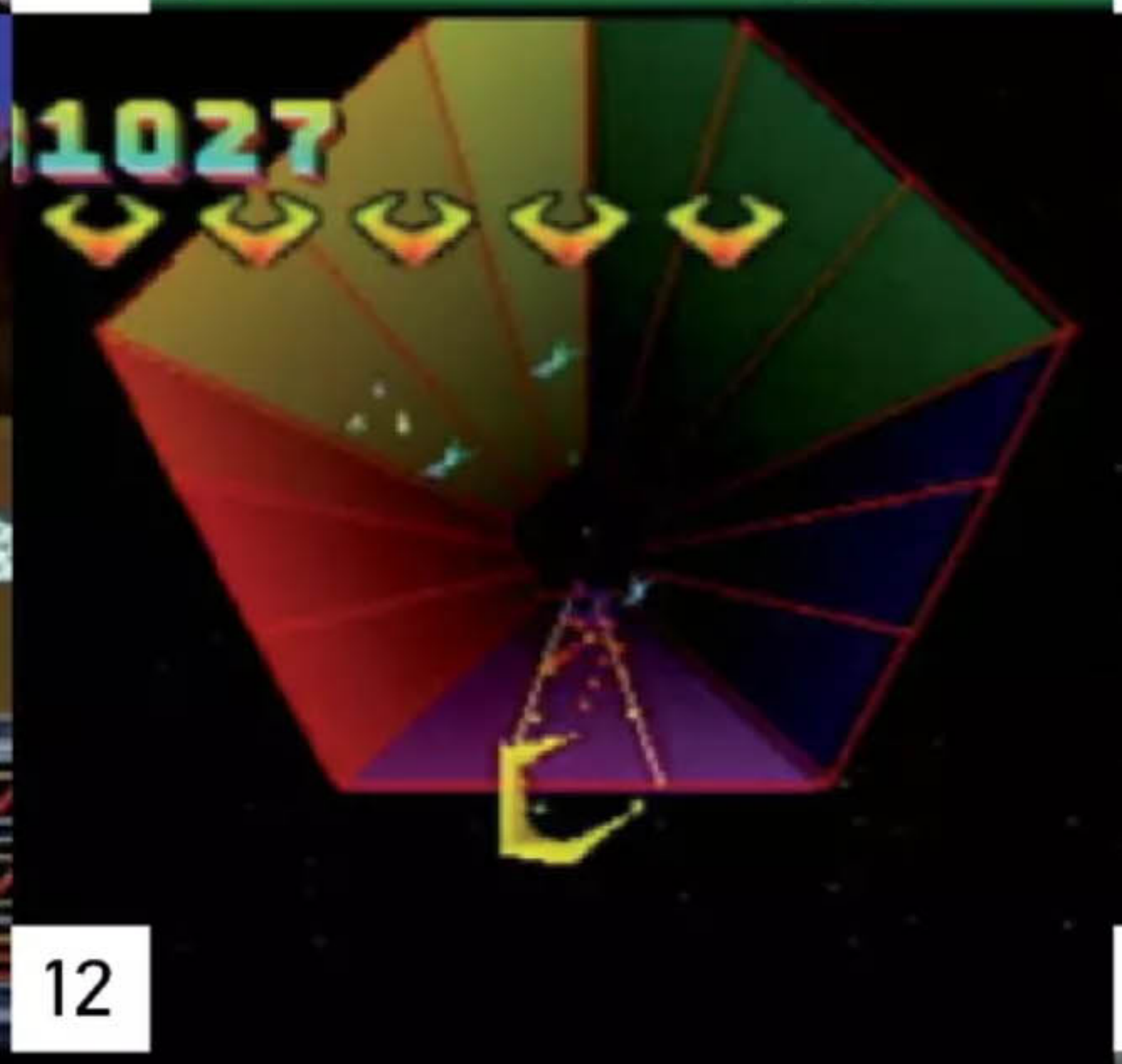
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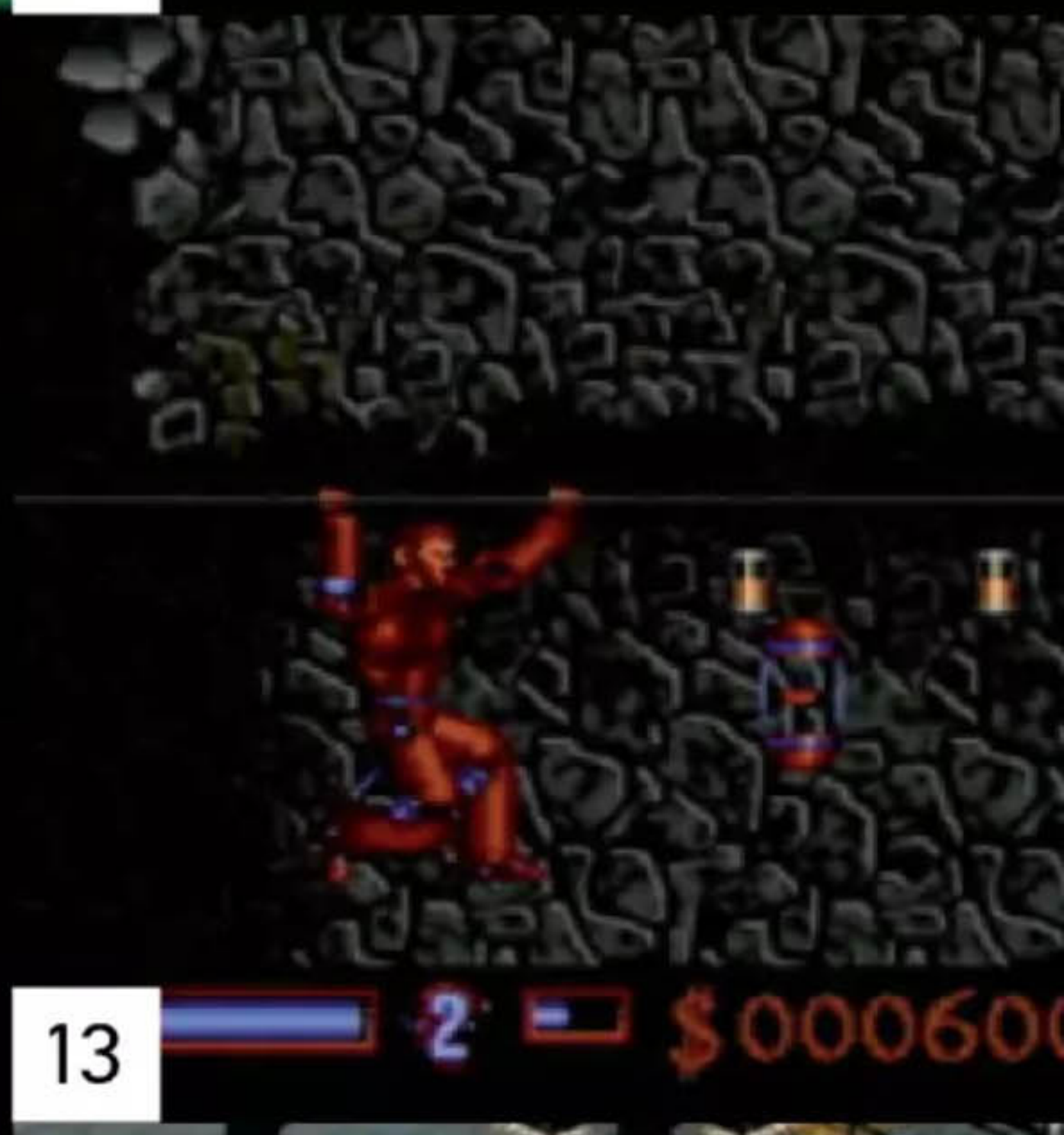
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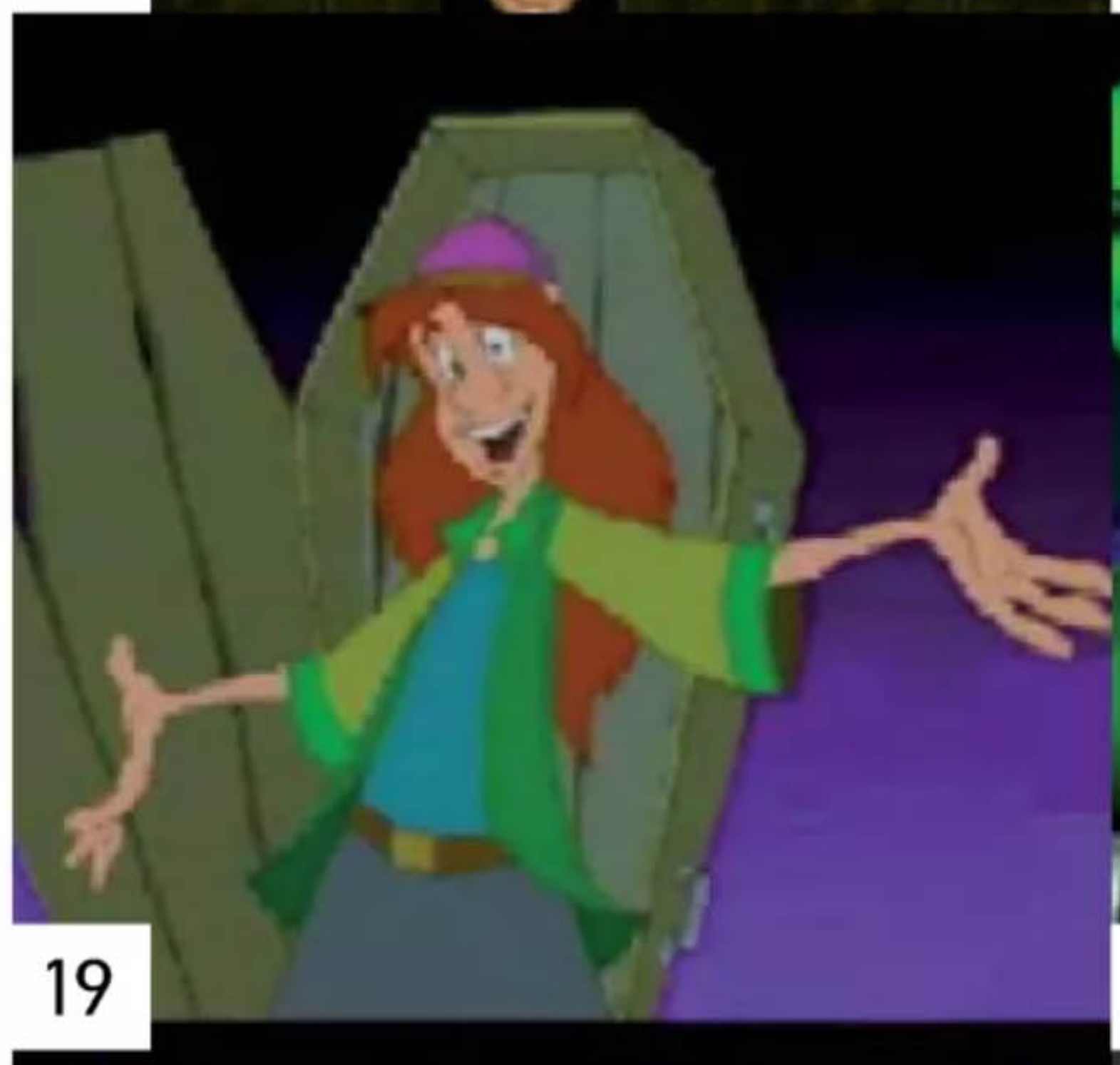
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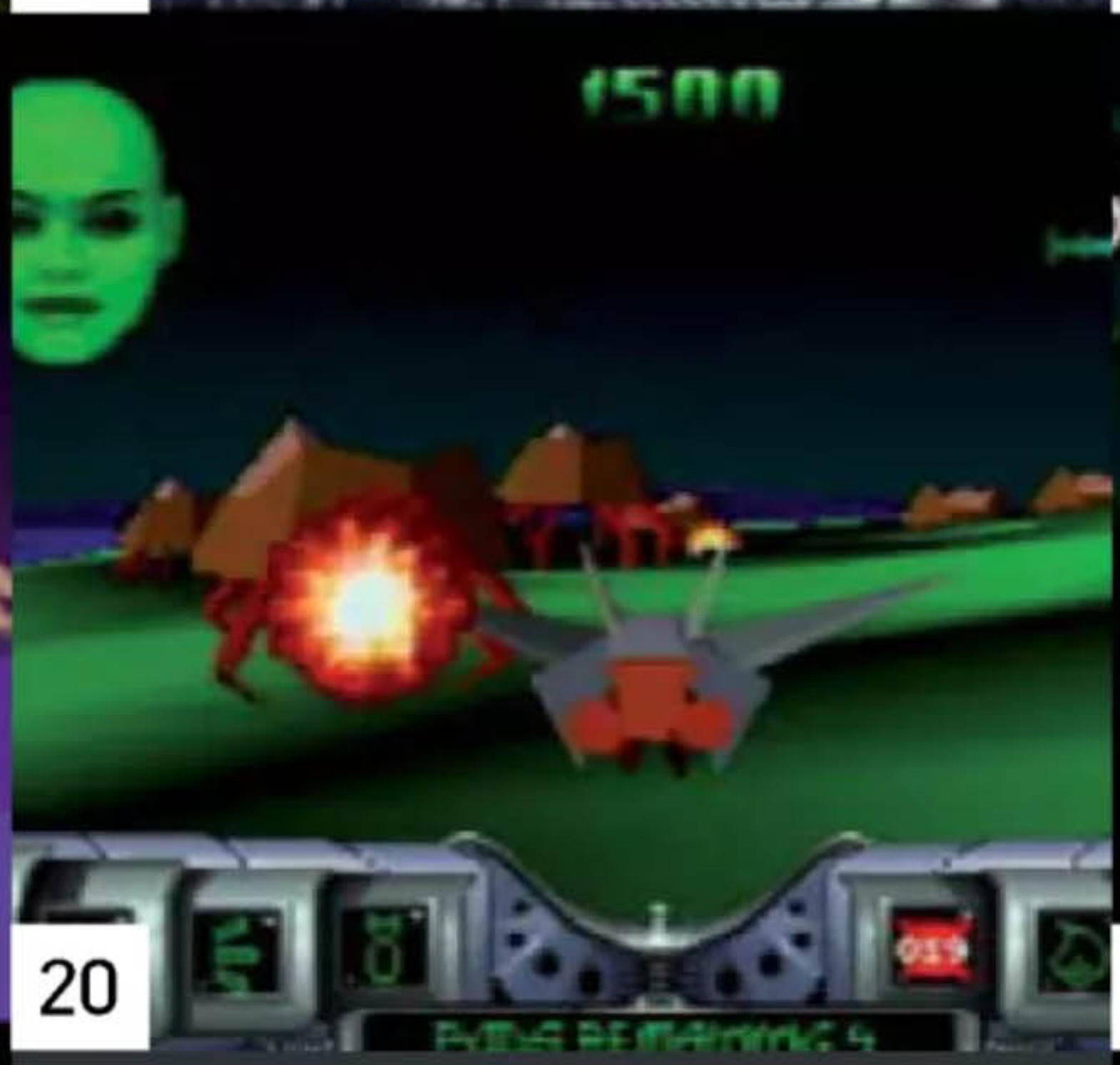
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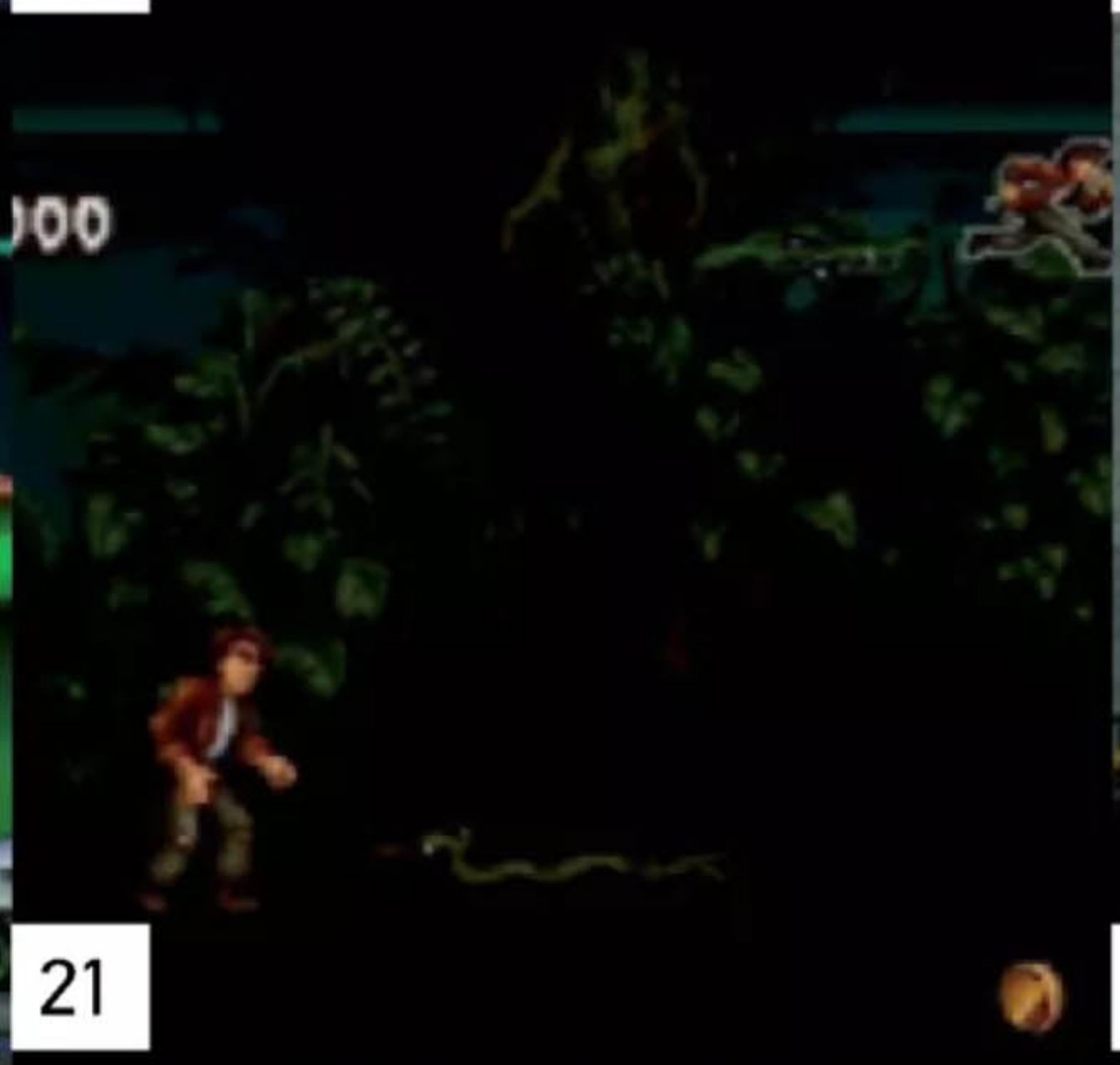
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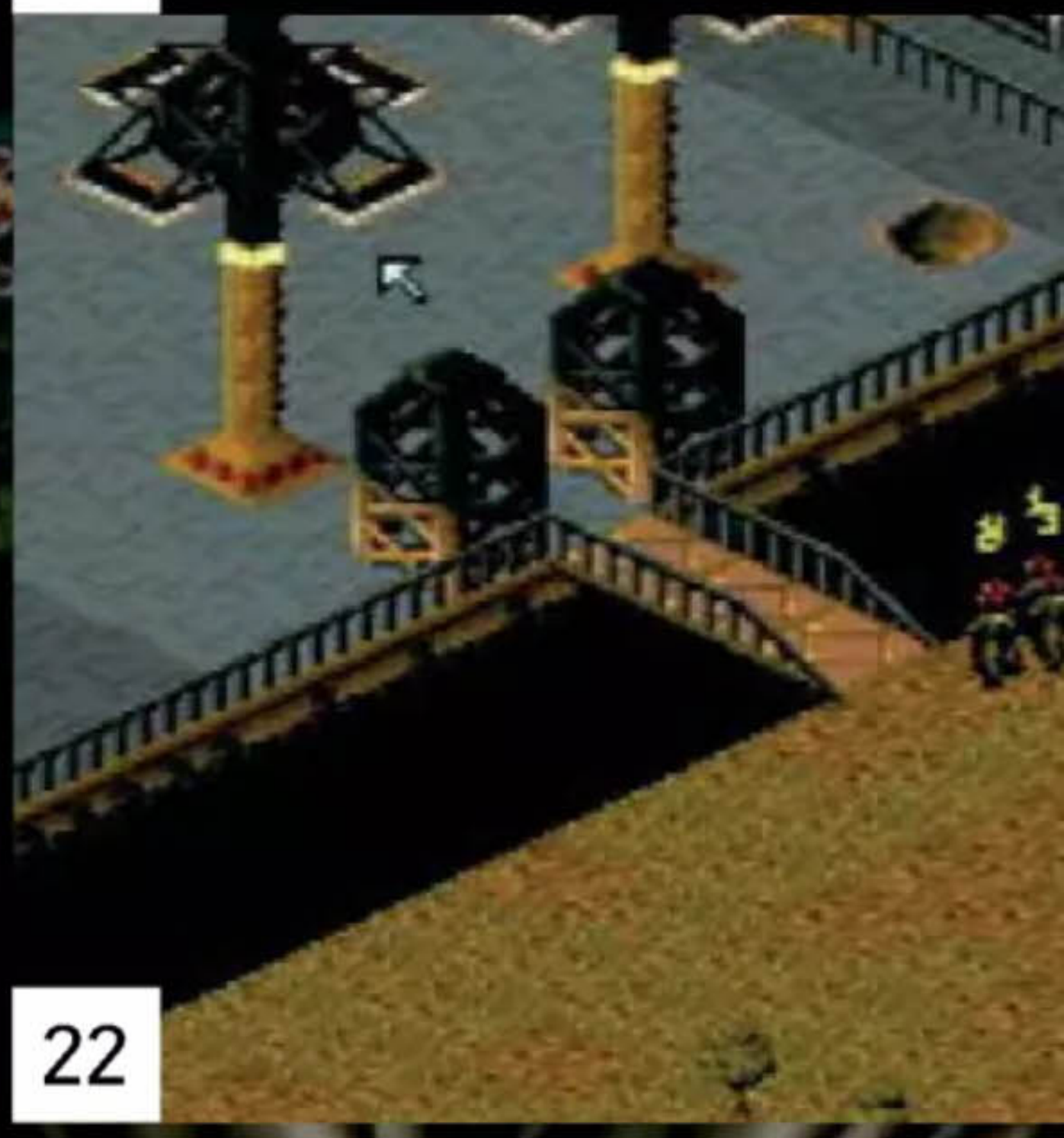
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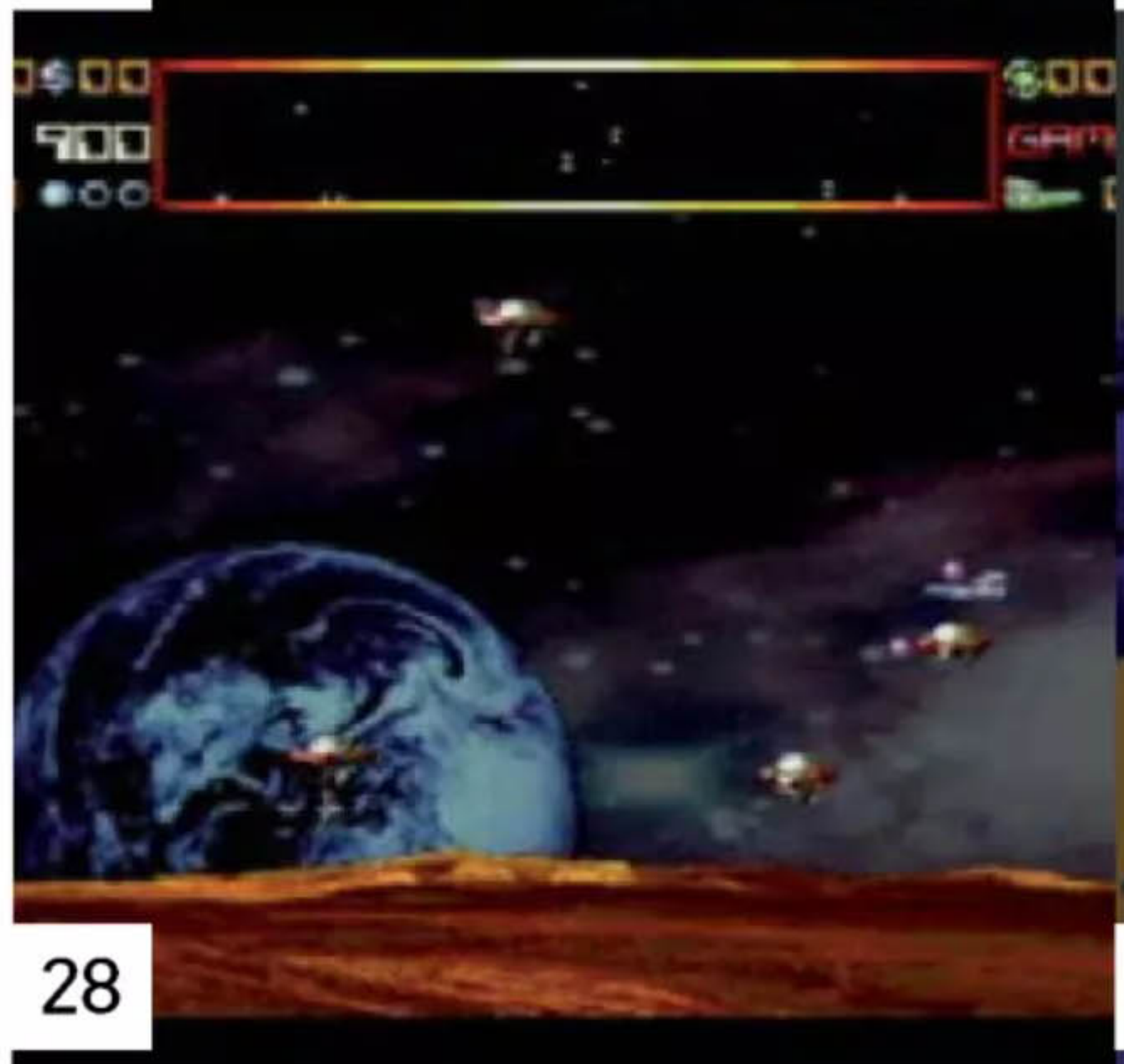
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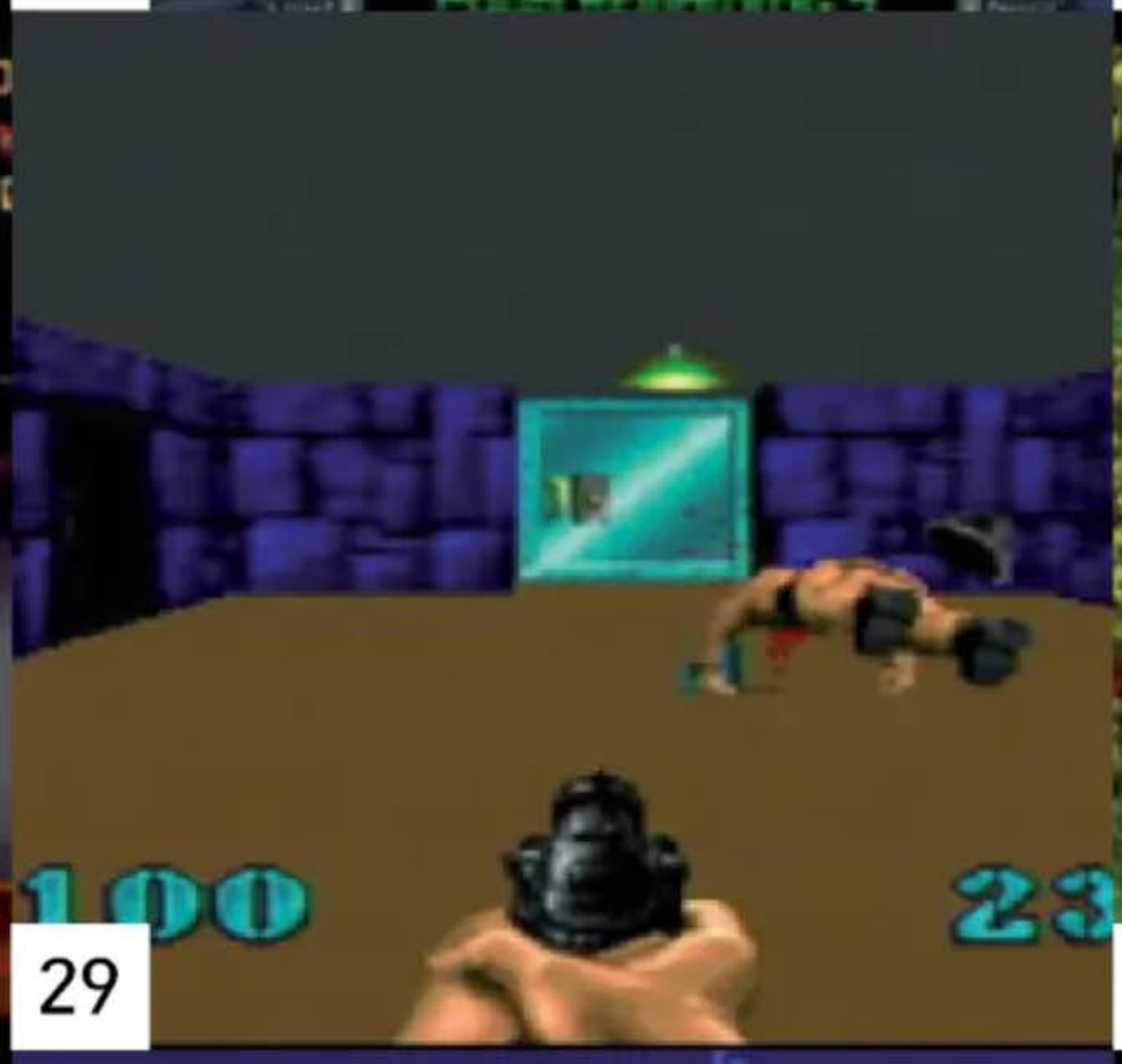
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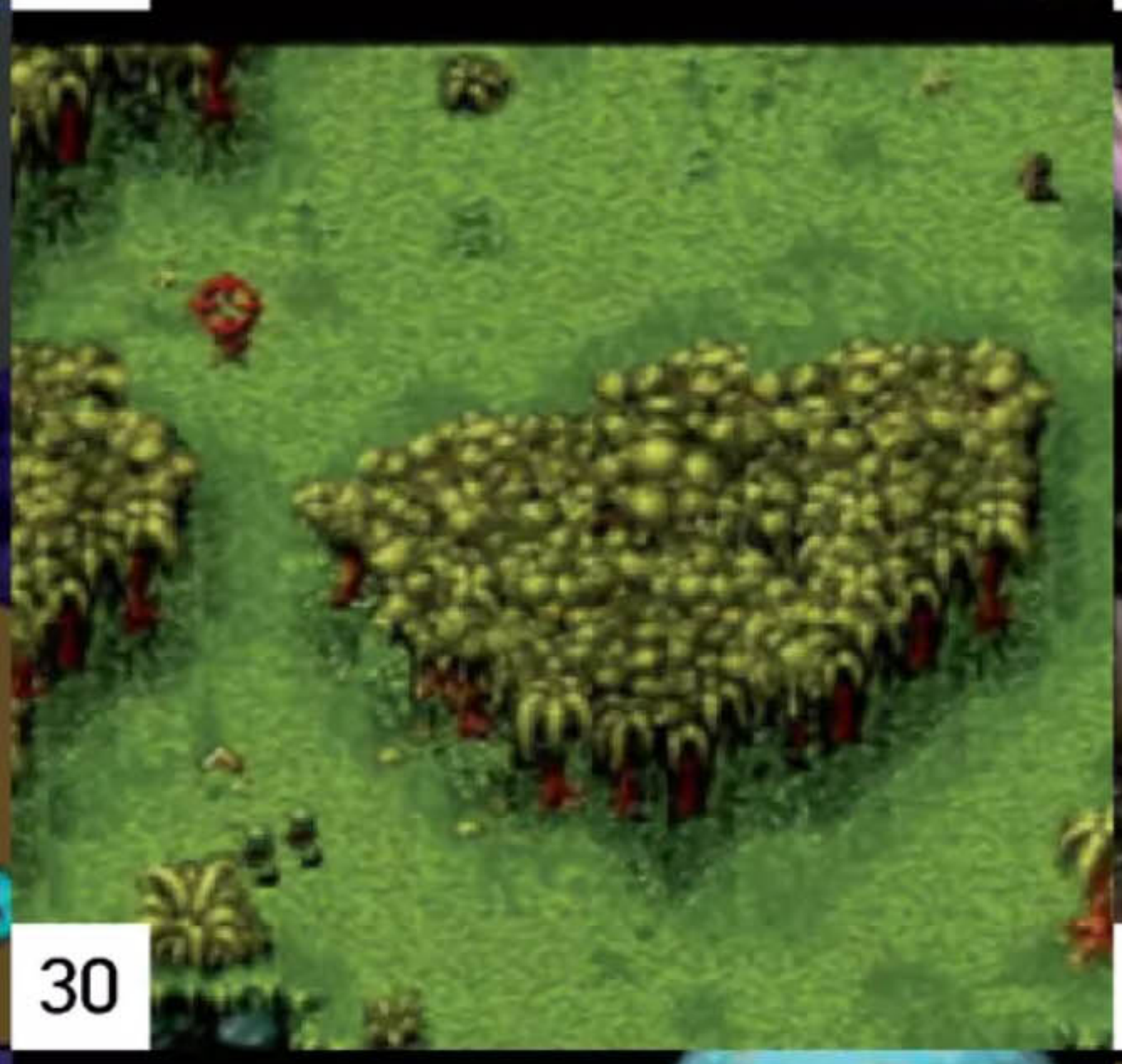
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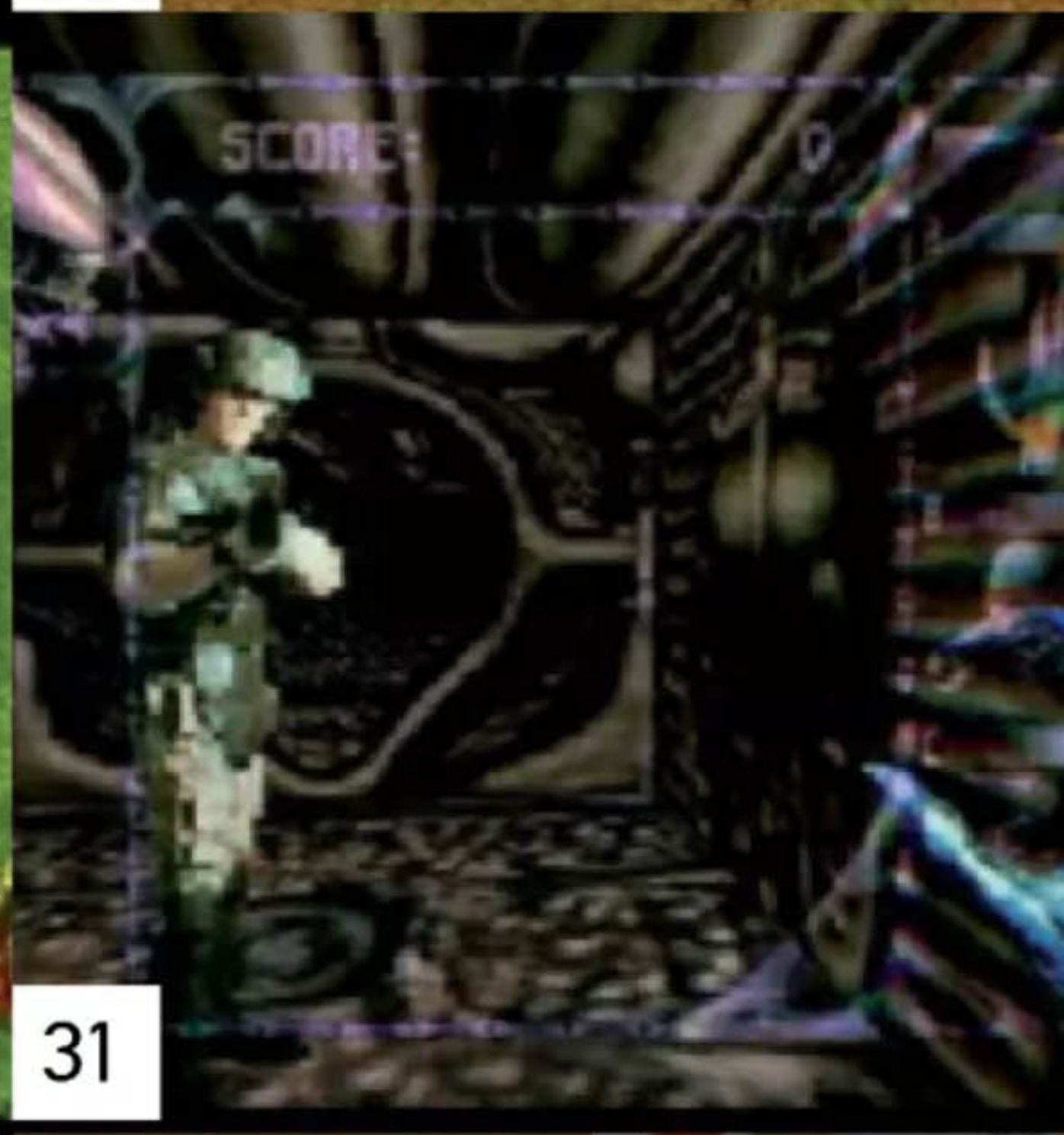
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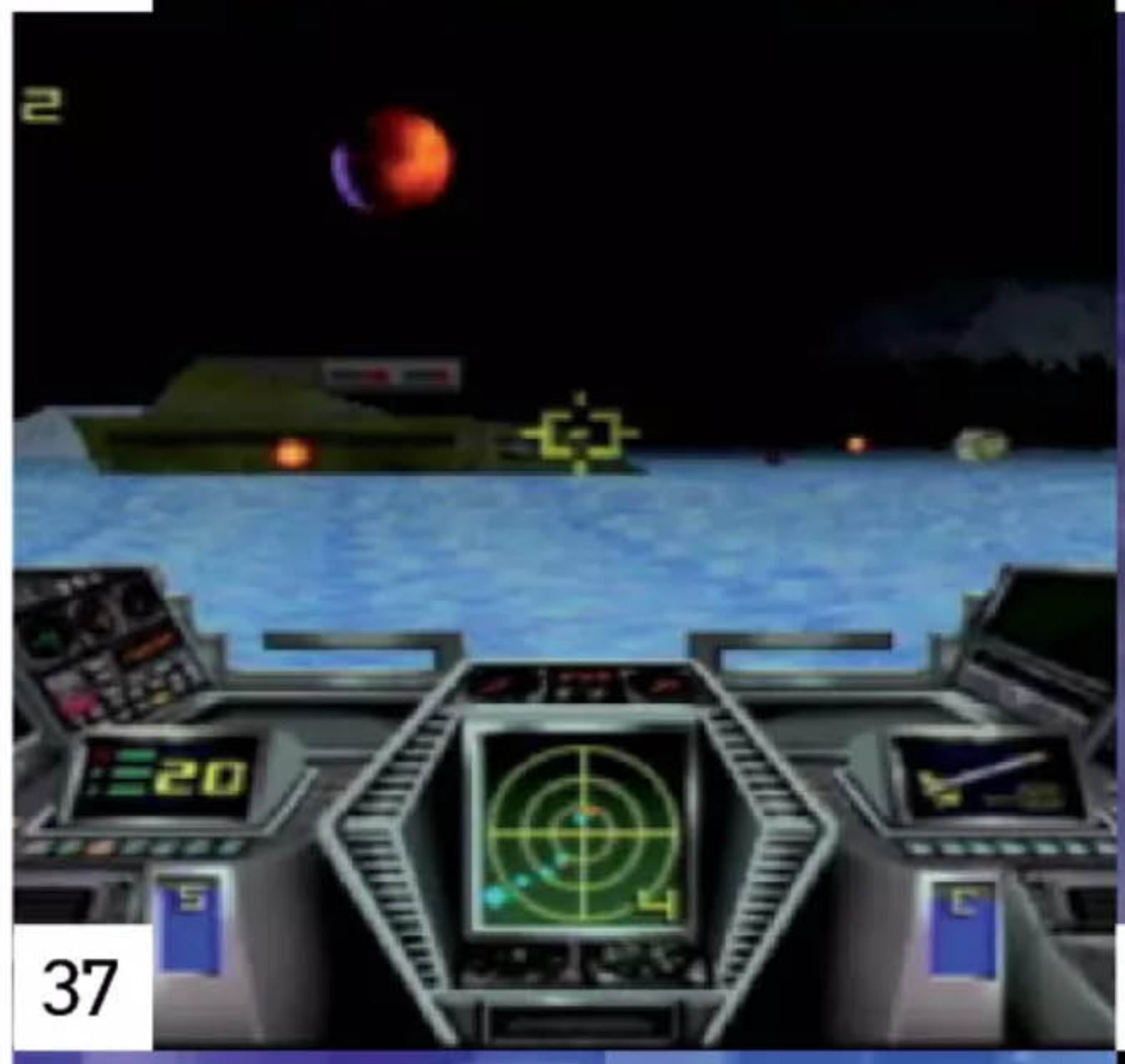
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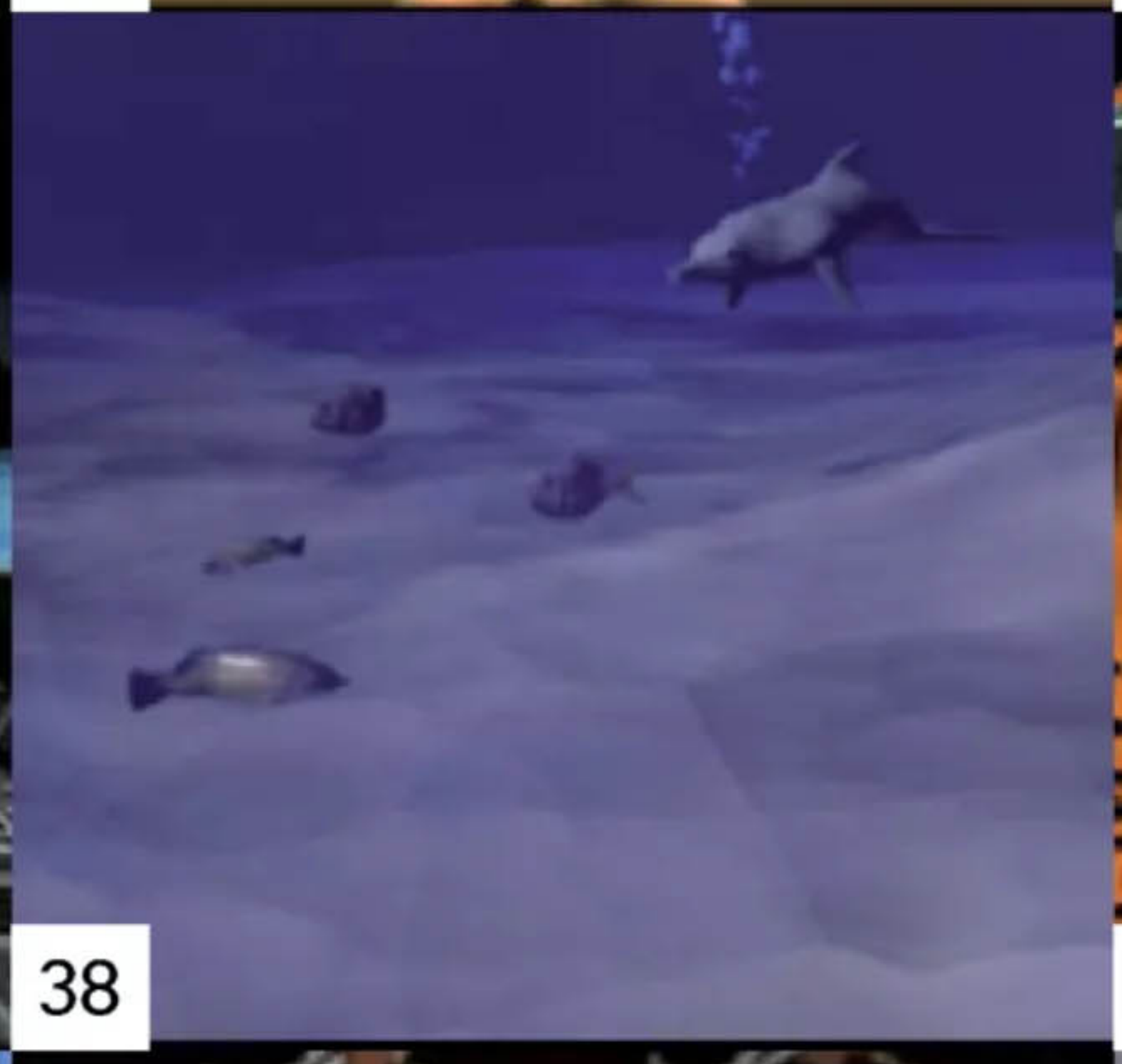
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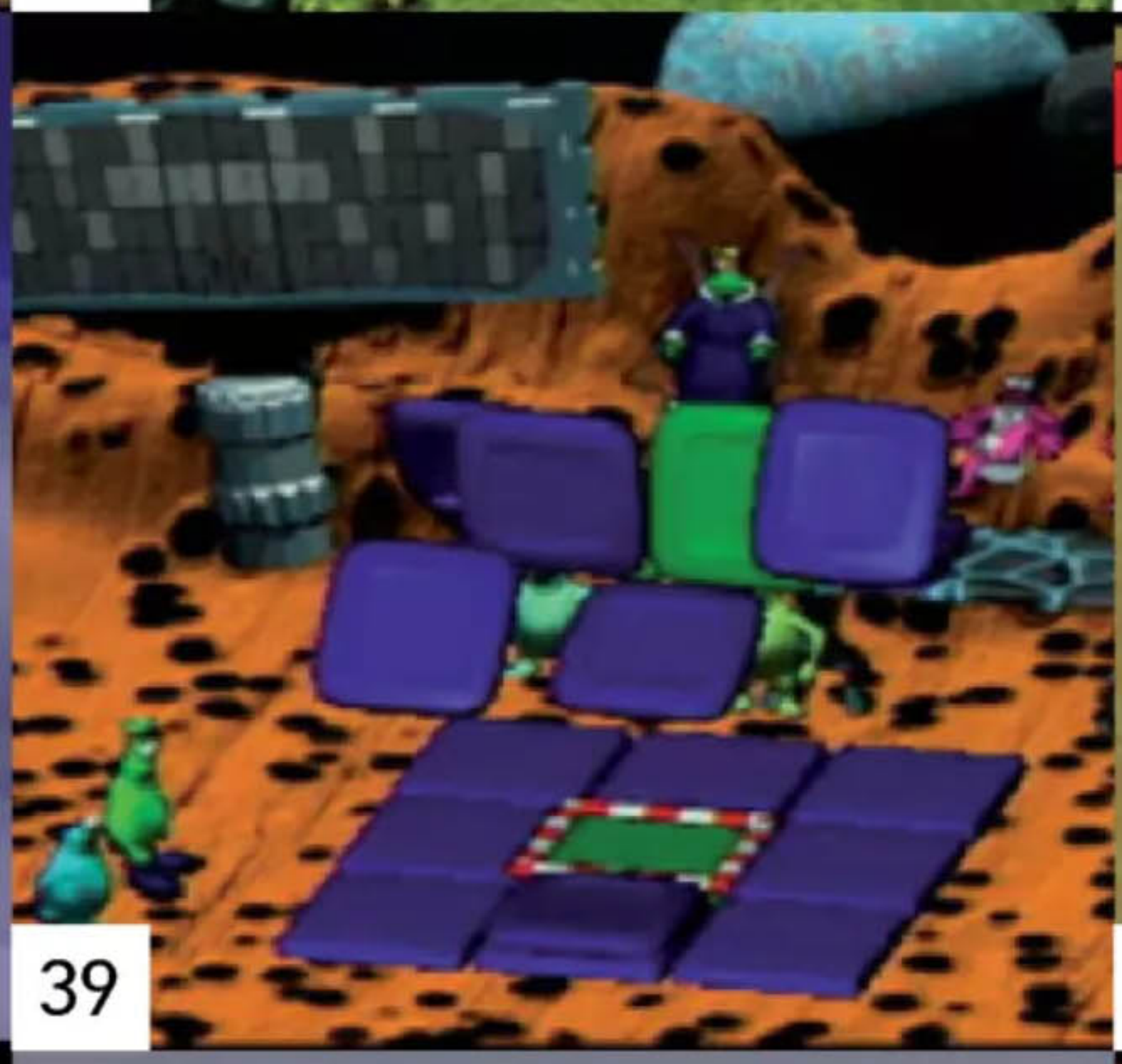
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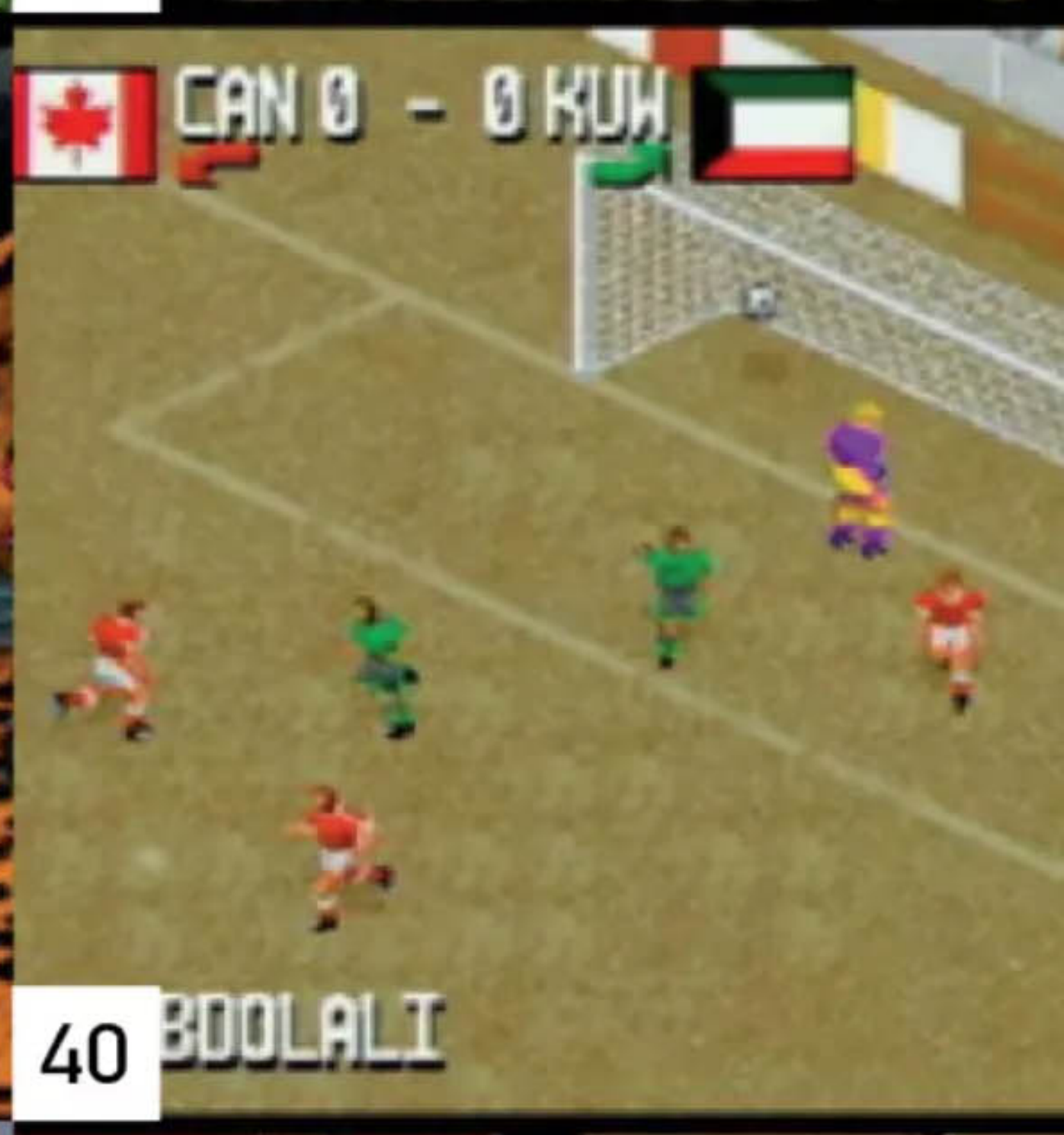
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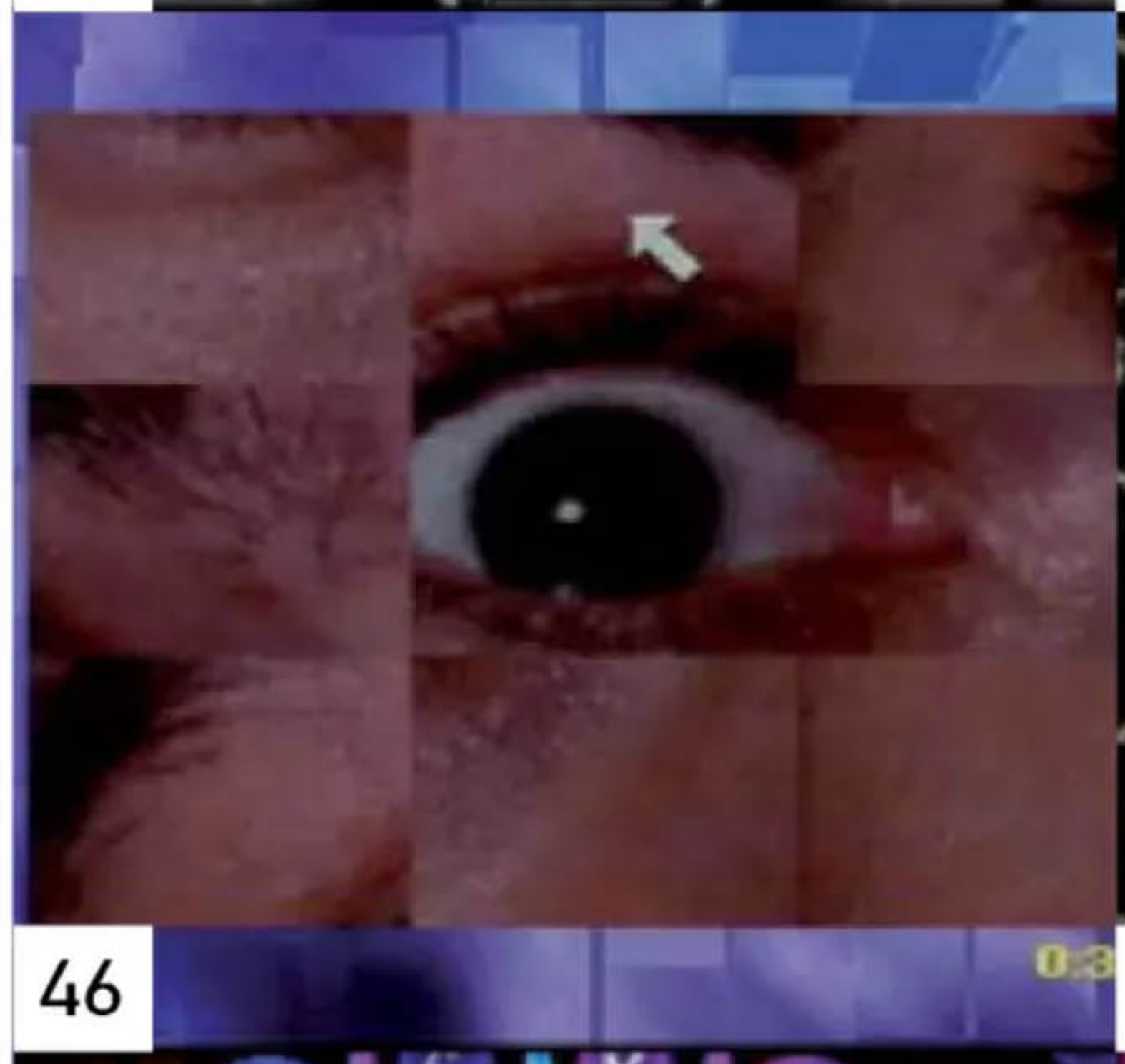
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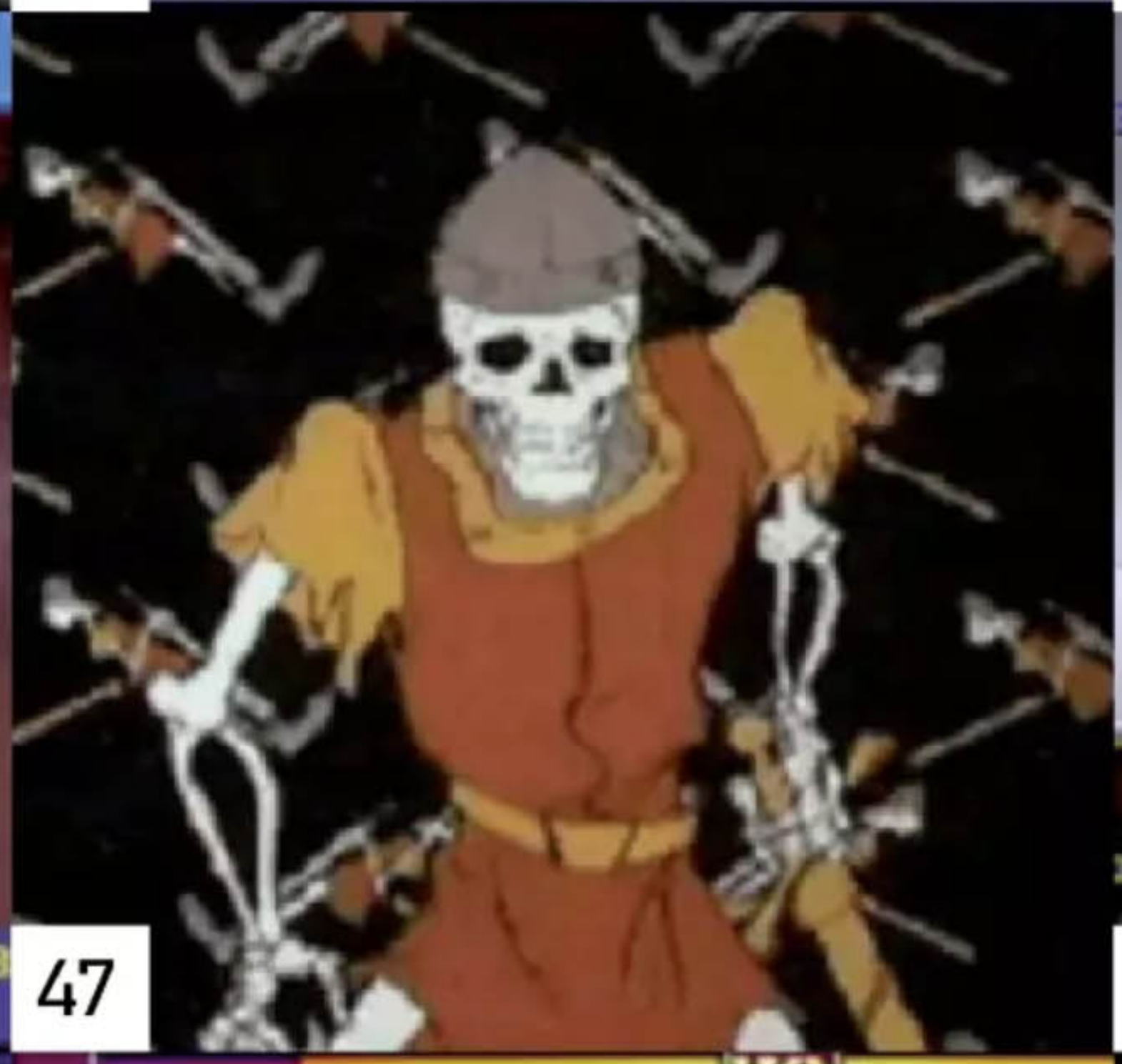
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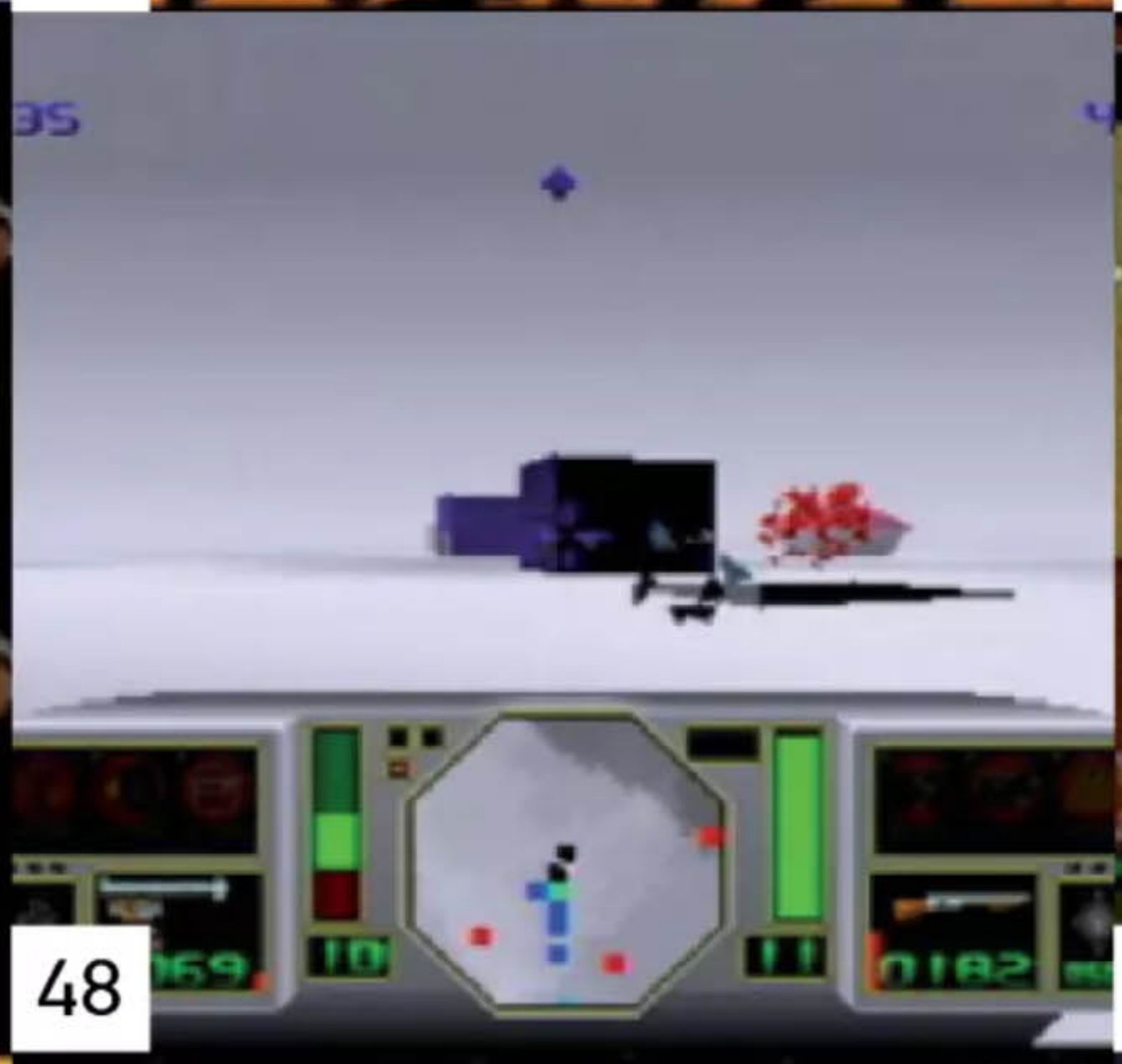
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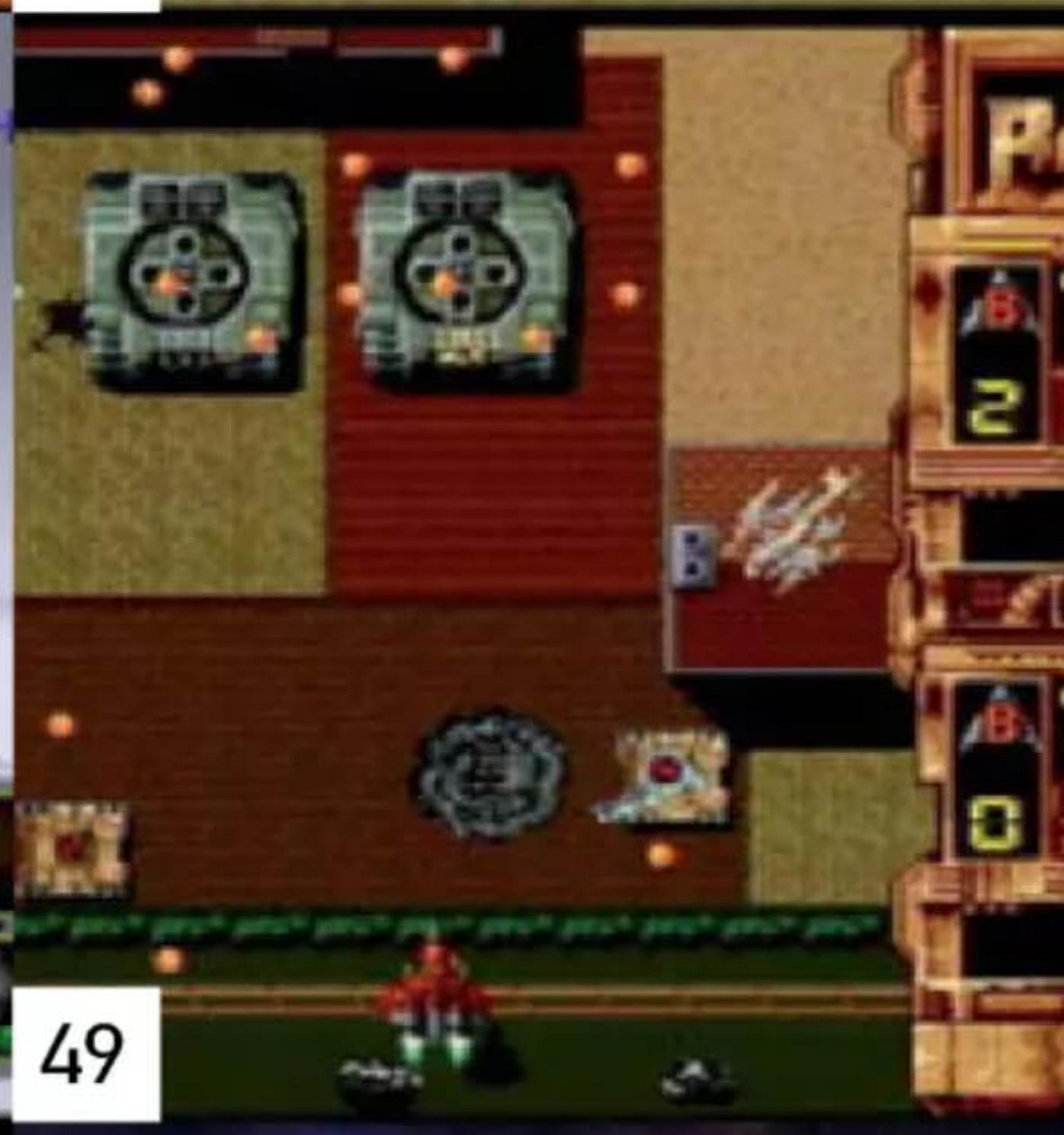
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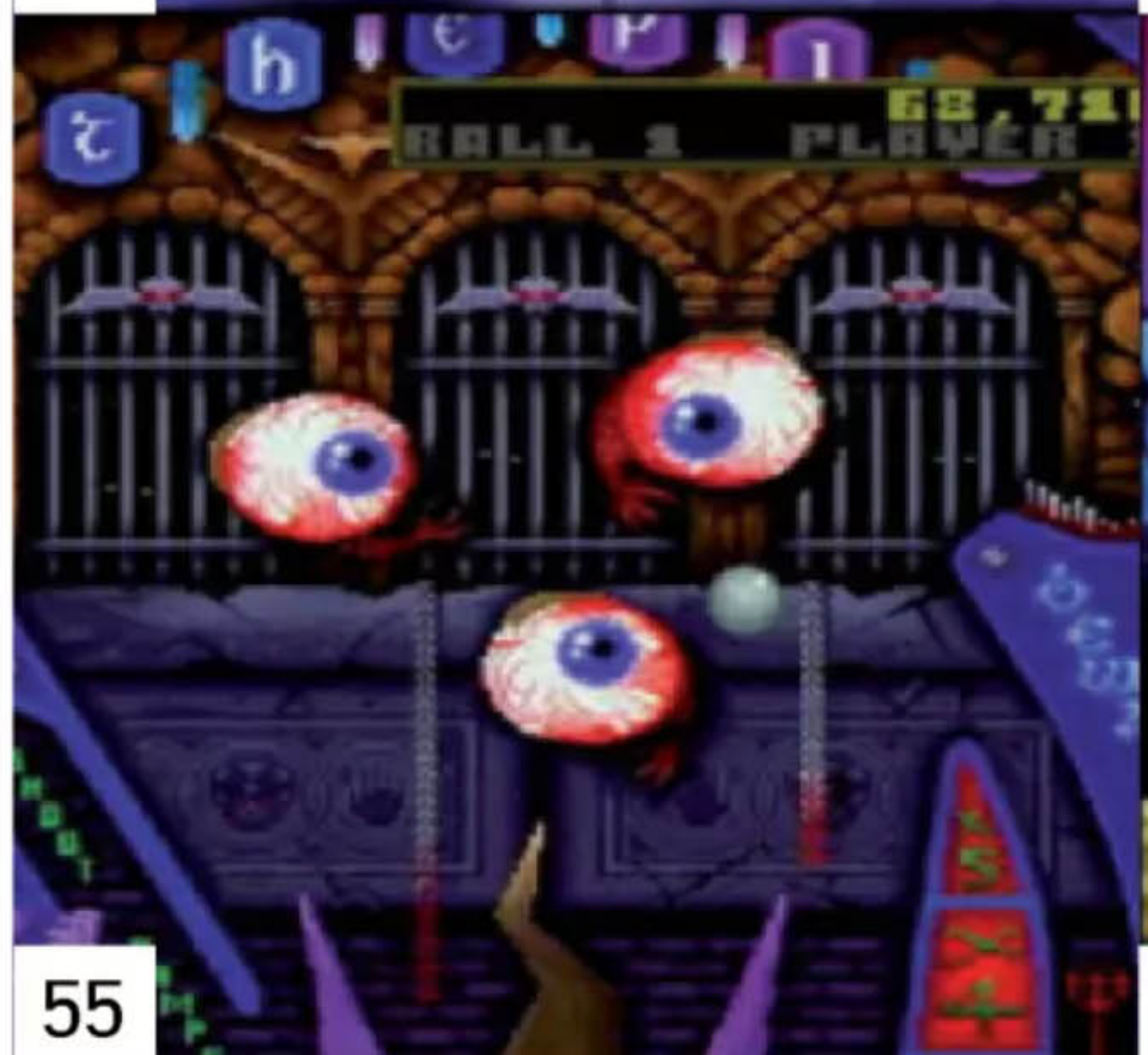
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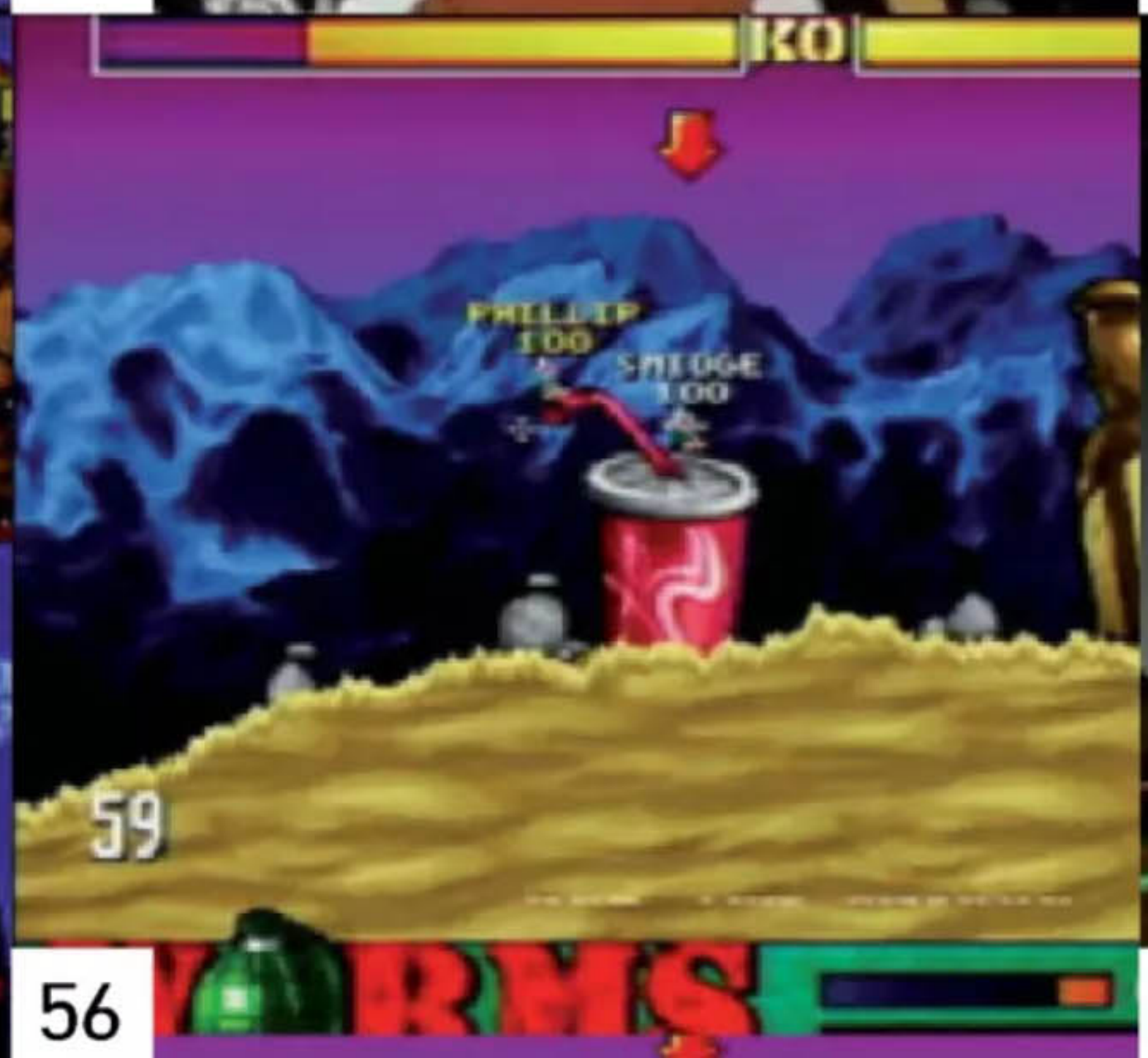
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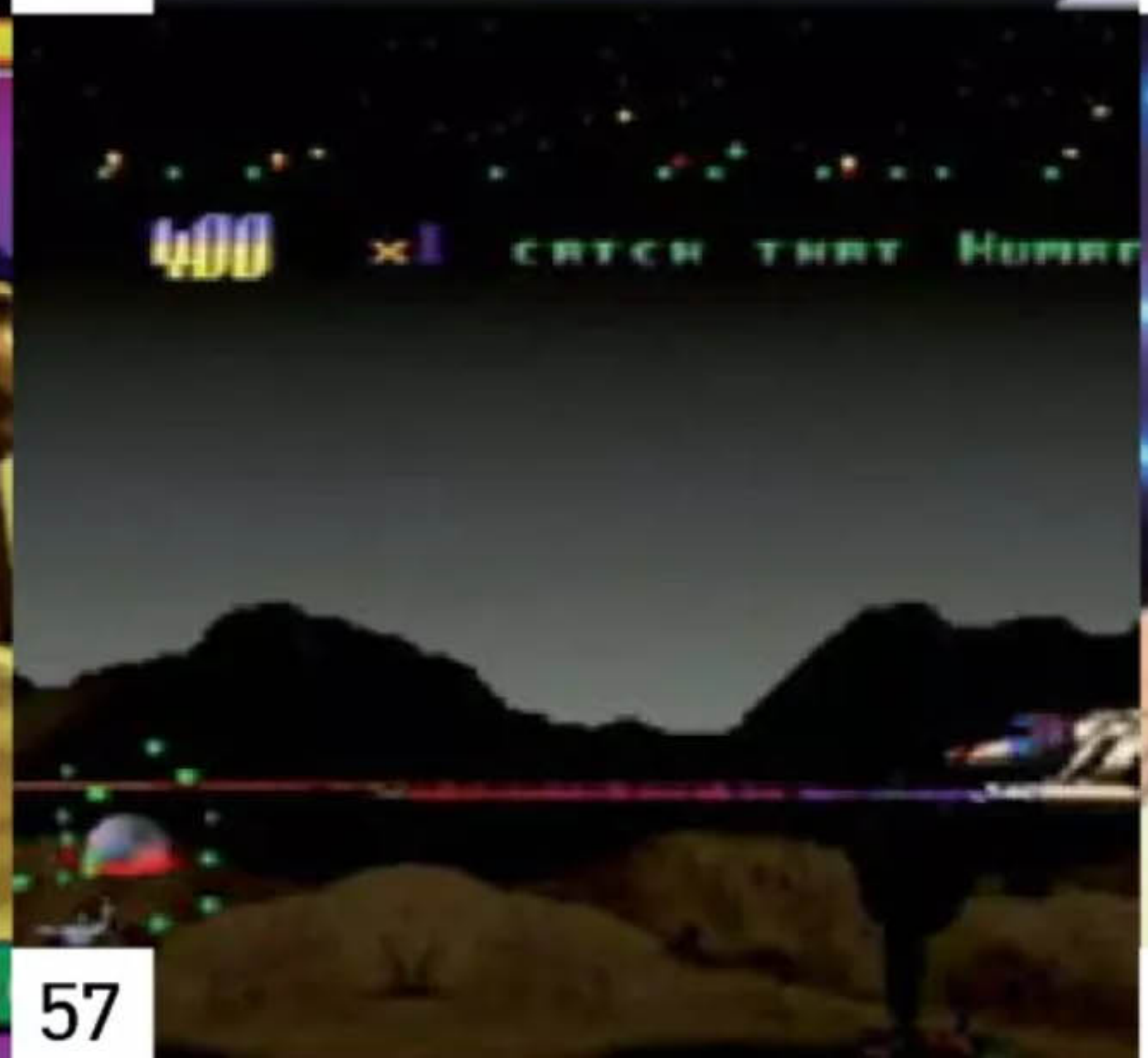
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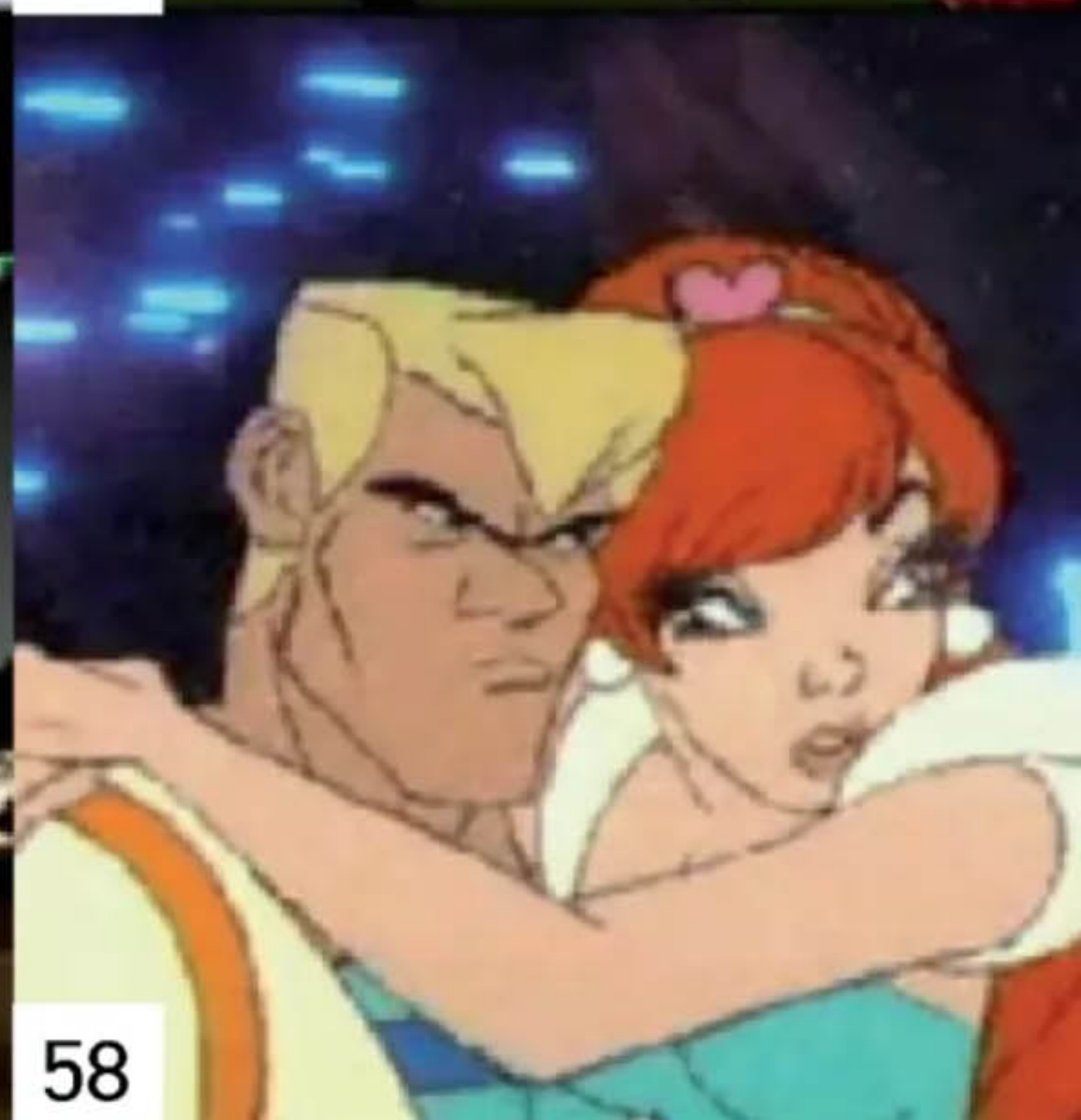
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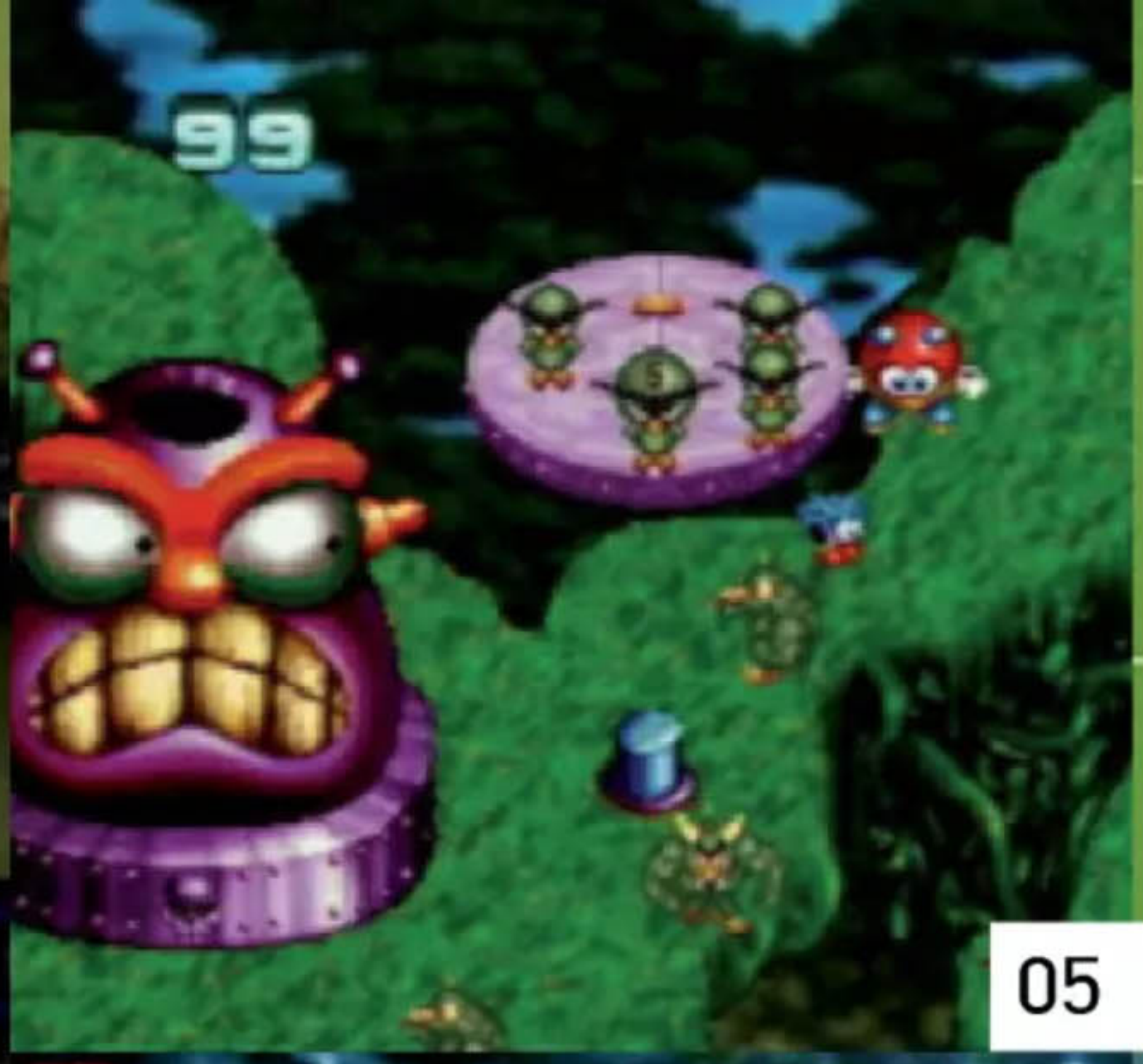

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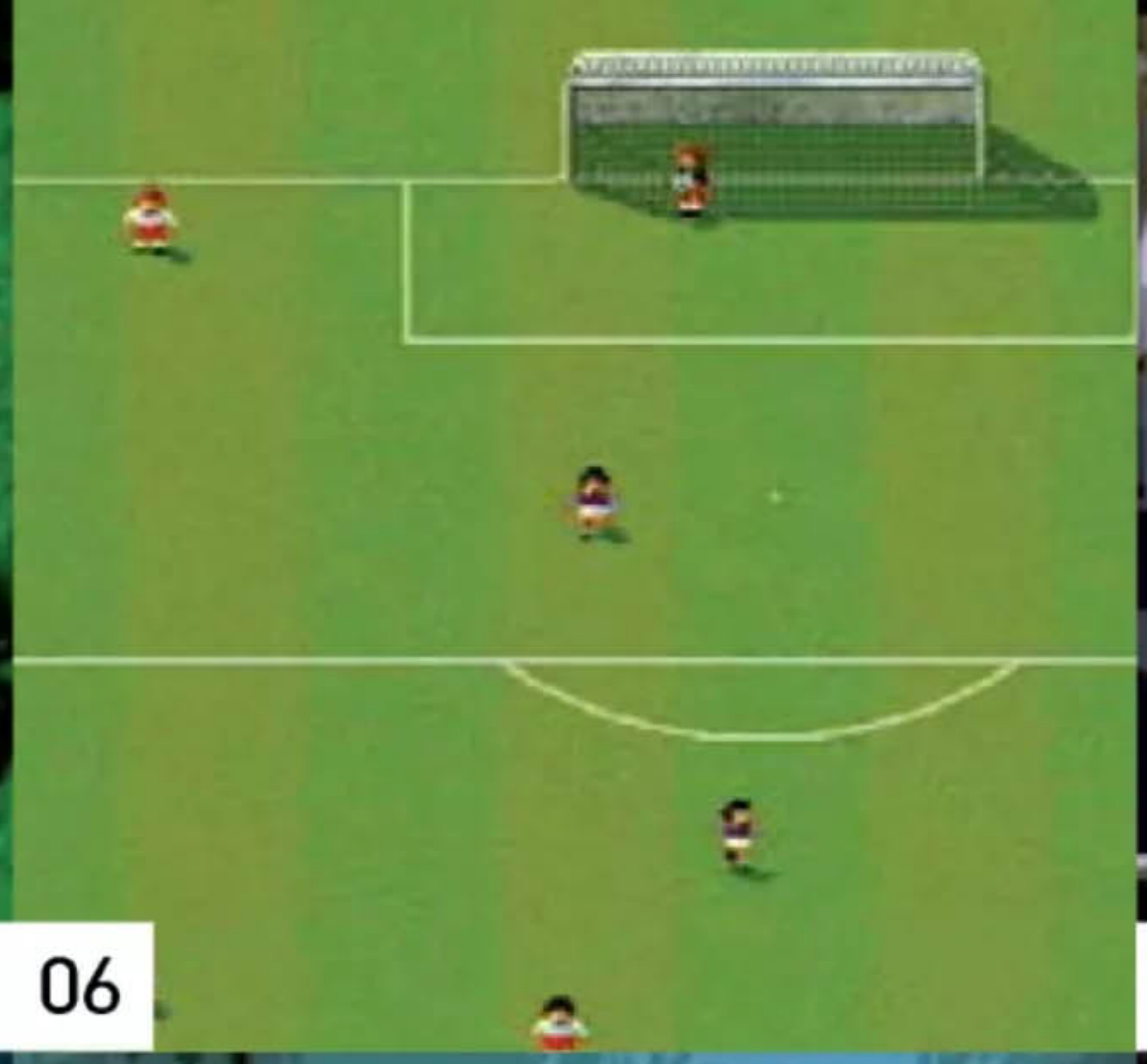

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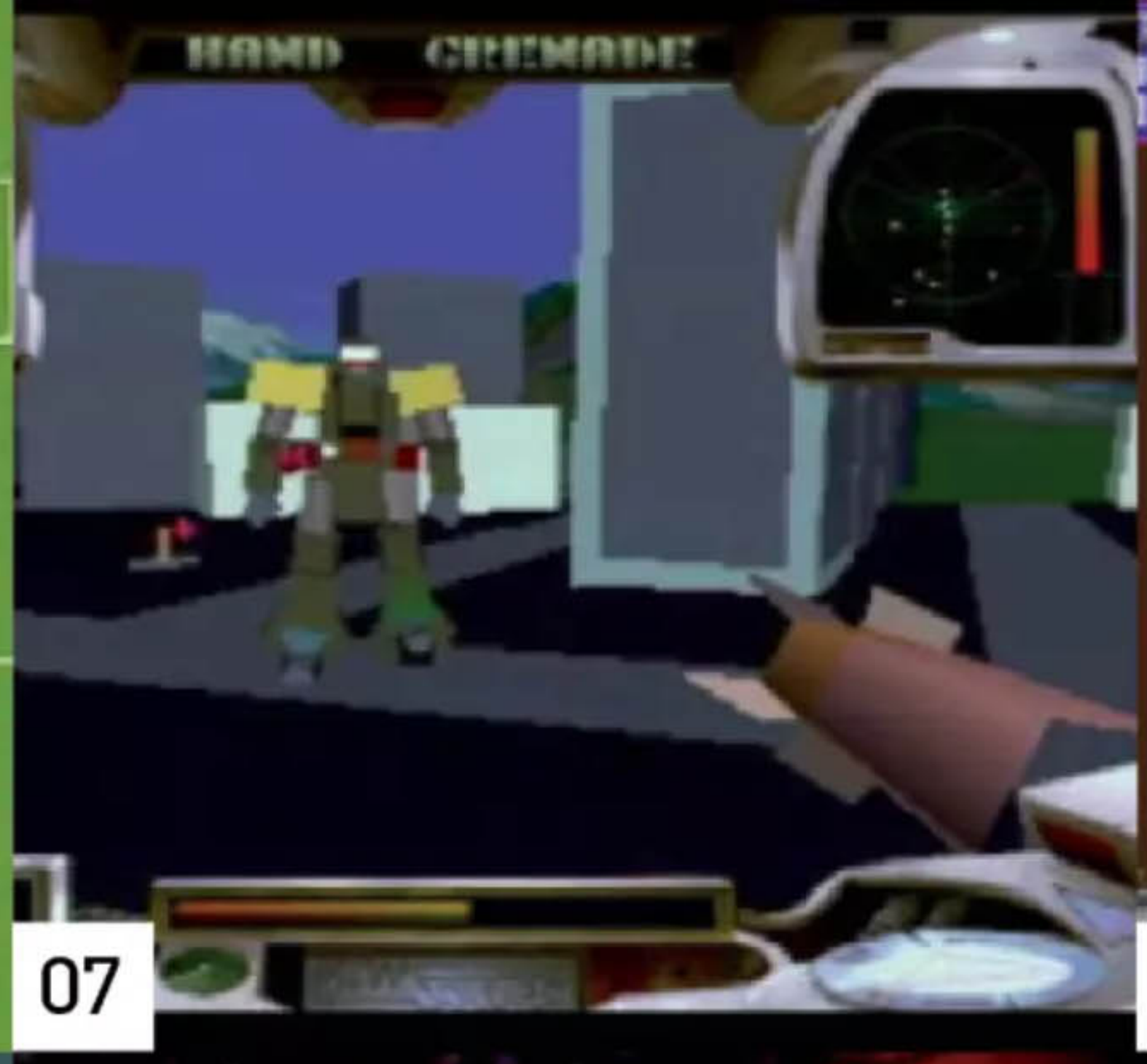
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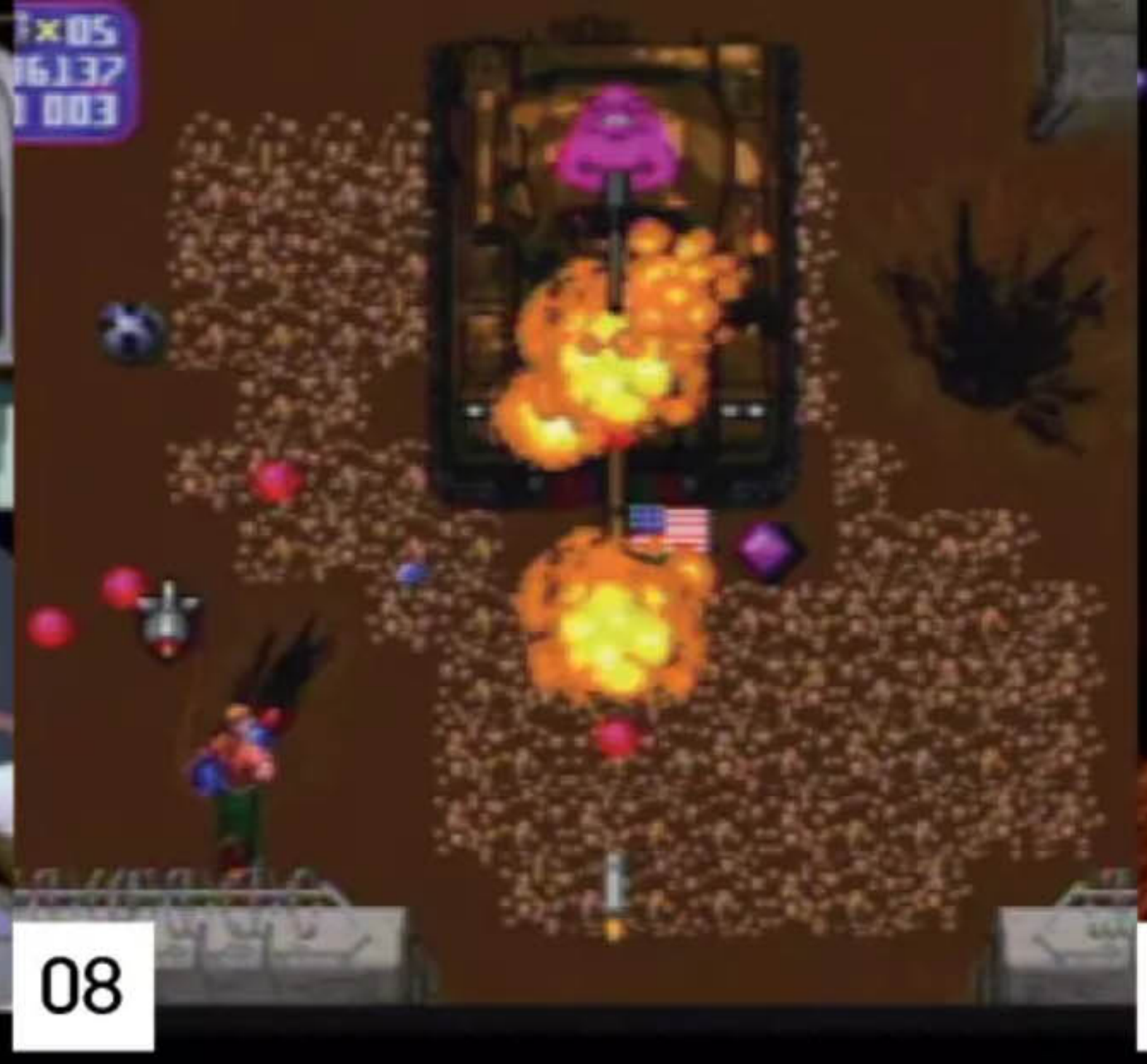

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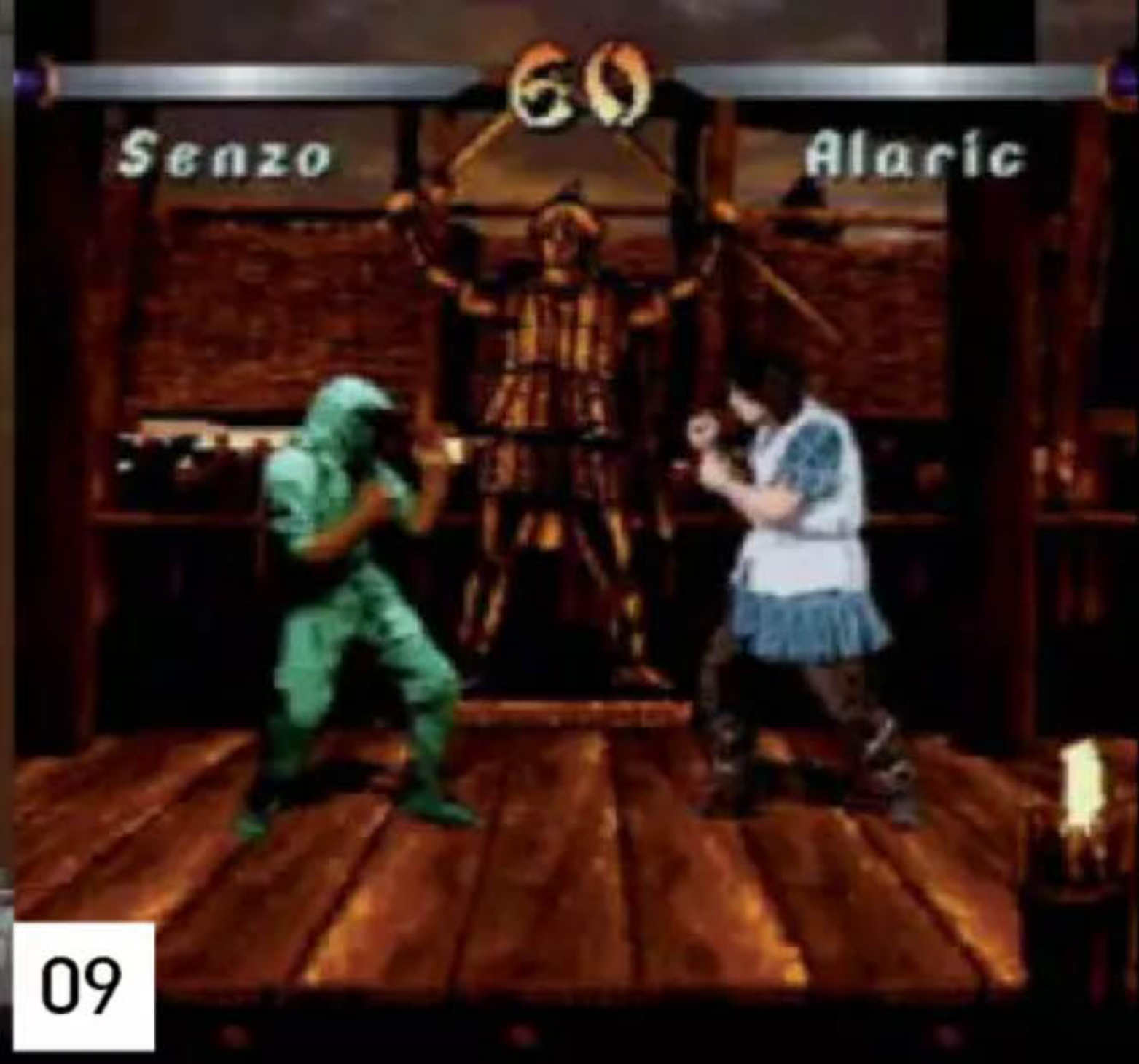
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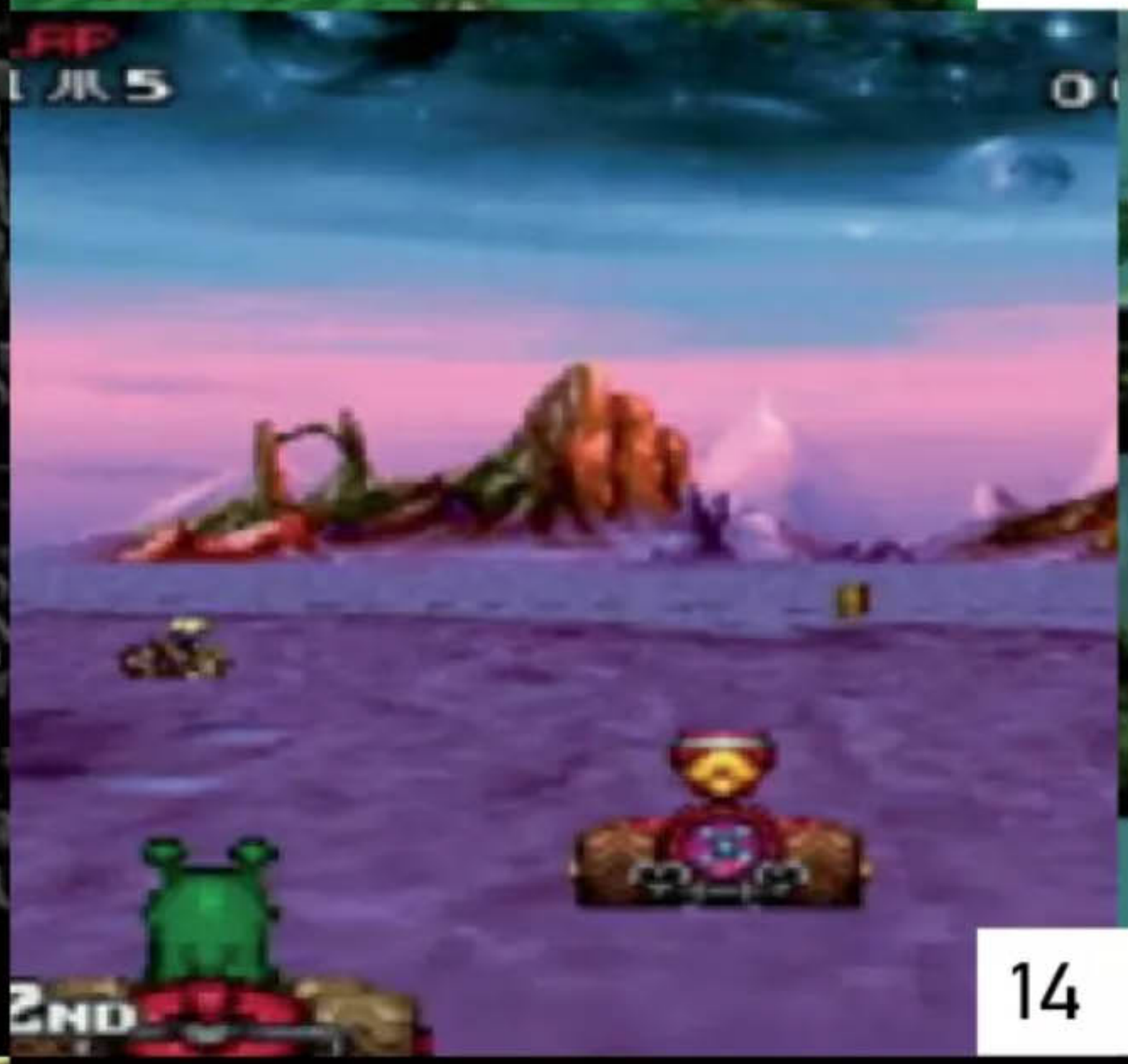

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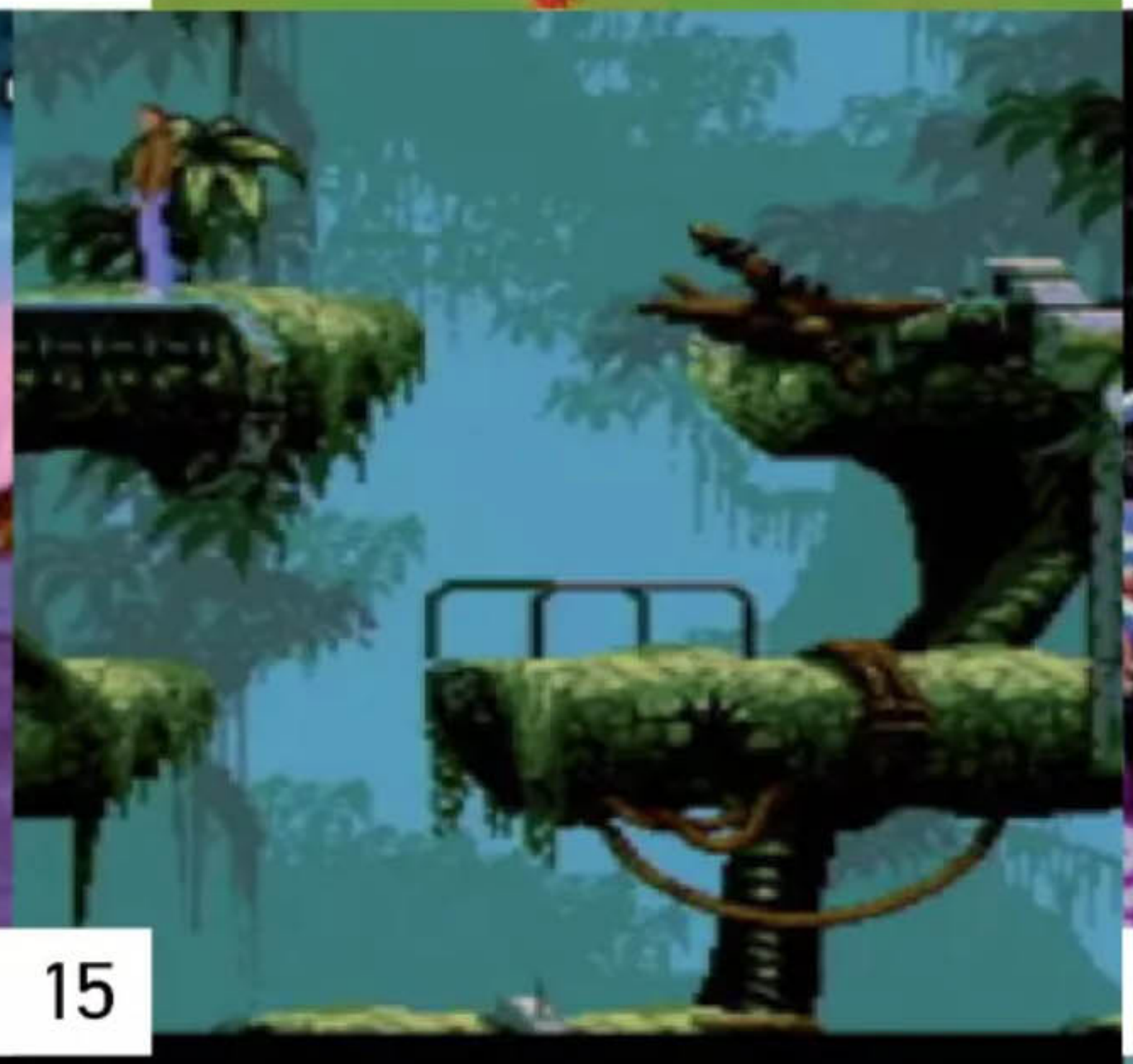

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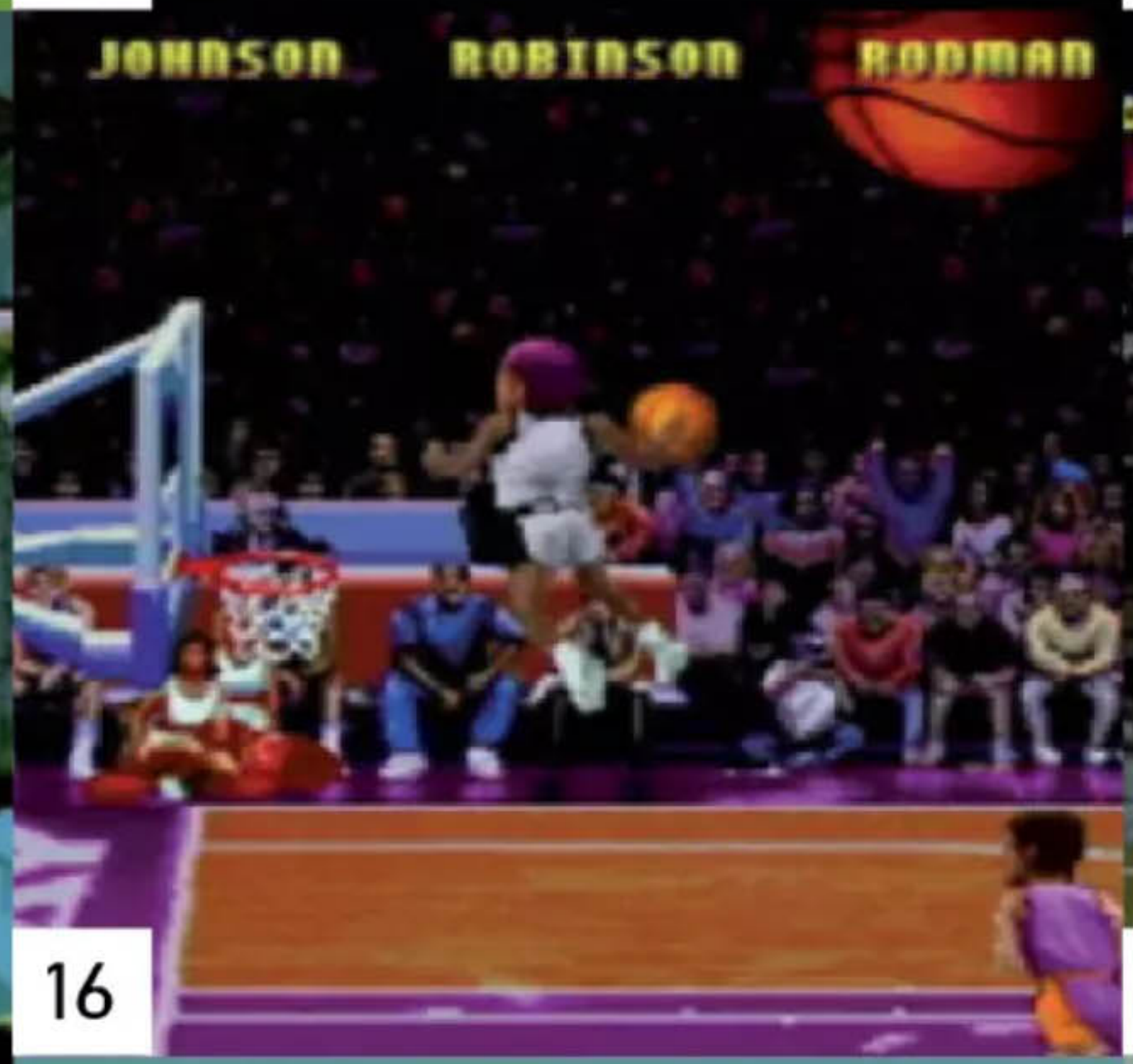
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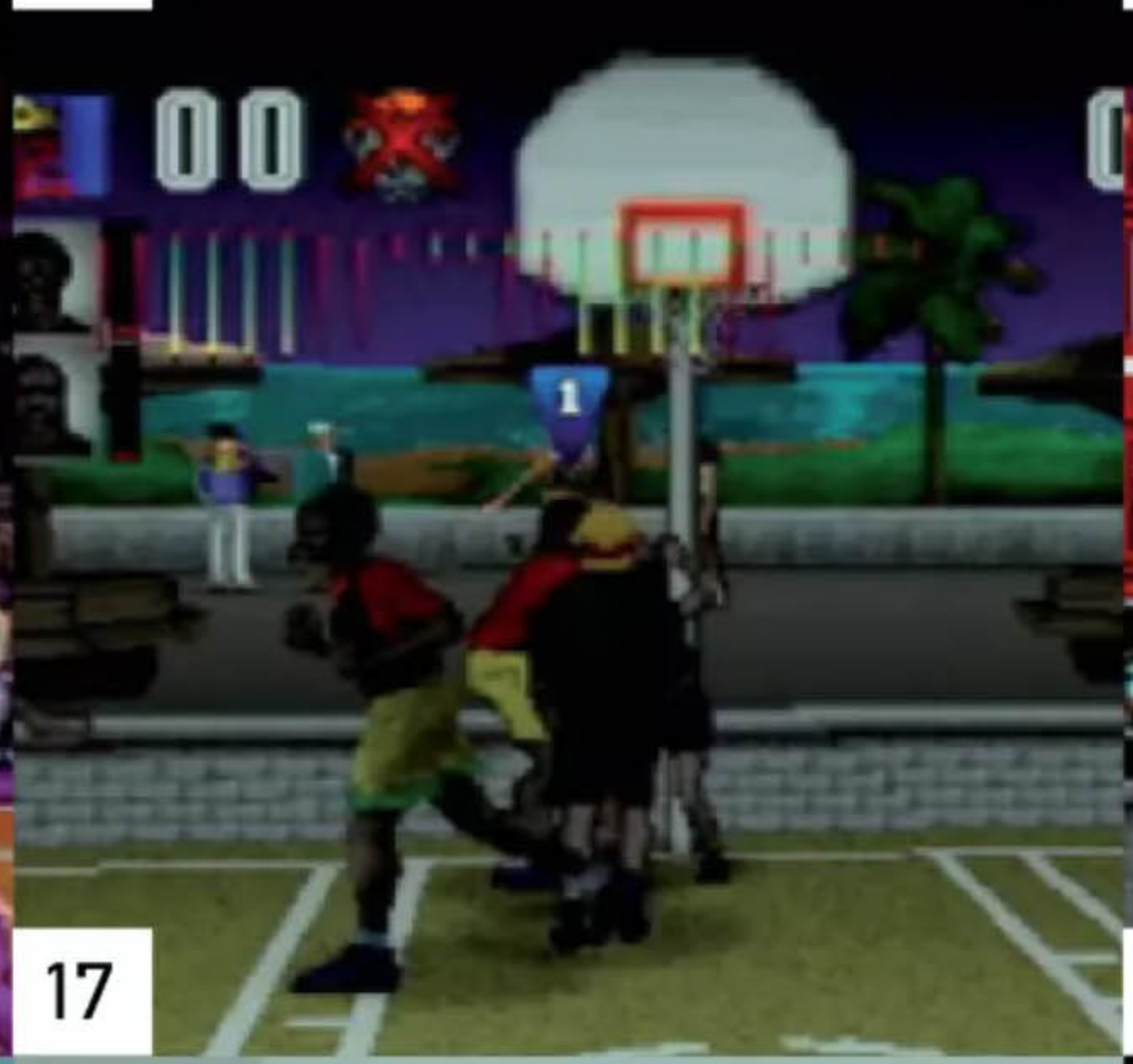

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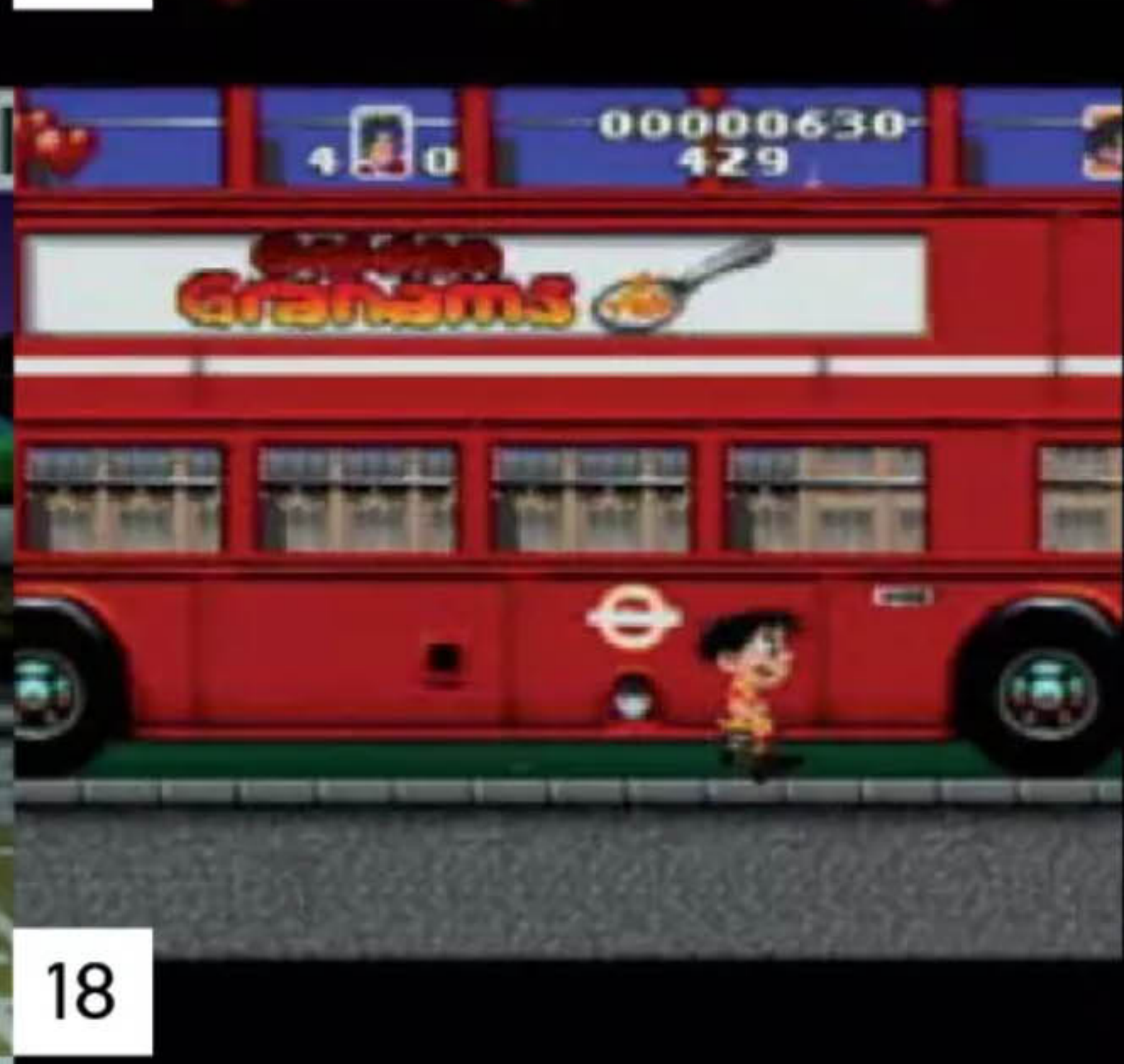
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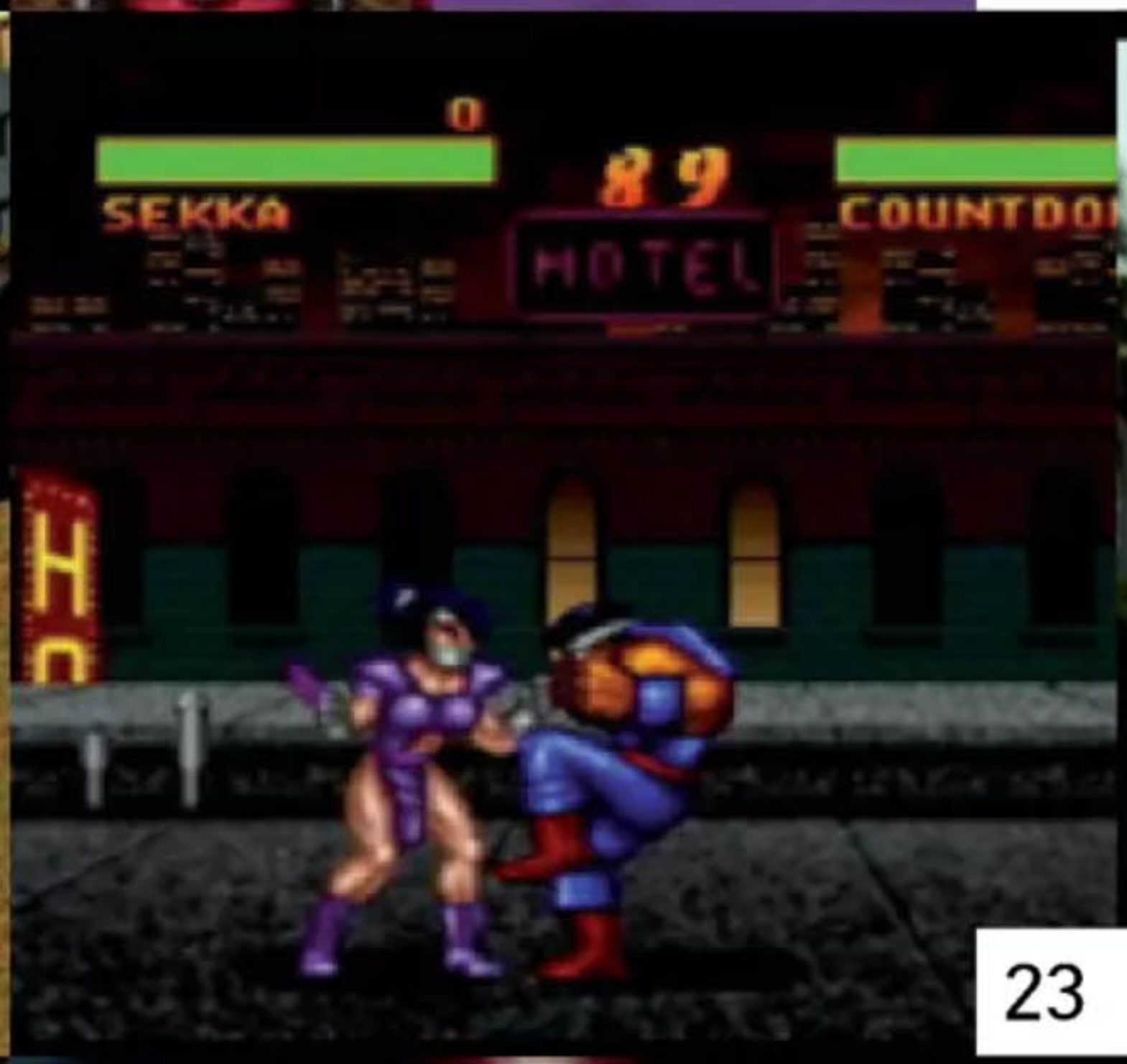
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COUNTDO
MOTEL

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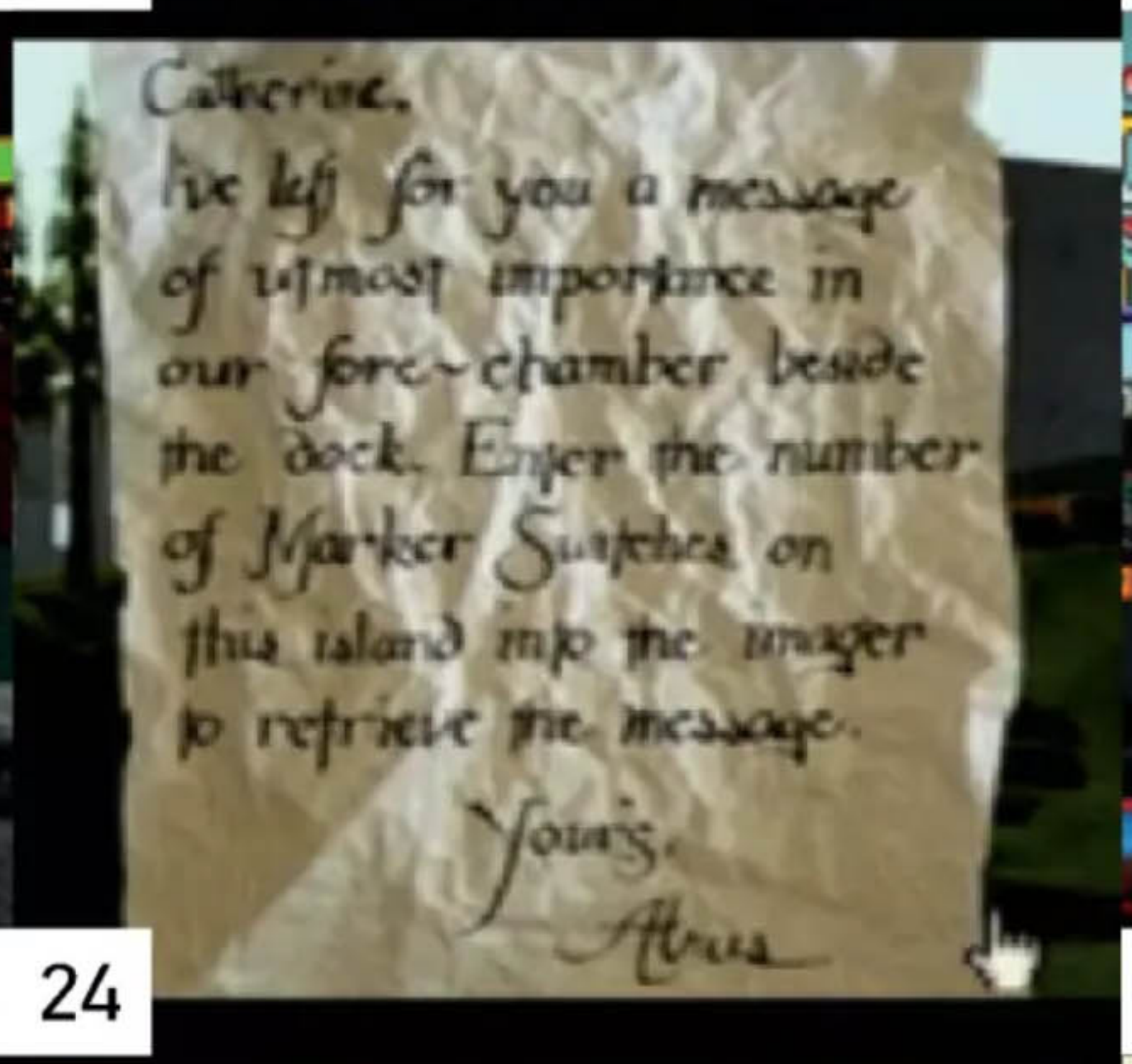
Catherine,
I've left for you a message
of utmost importance in
our fore-chamber beside
the dock. Enter the number
of Marker Switches on
this island into the imager
to retrieve the message.
Yours,
Atrus

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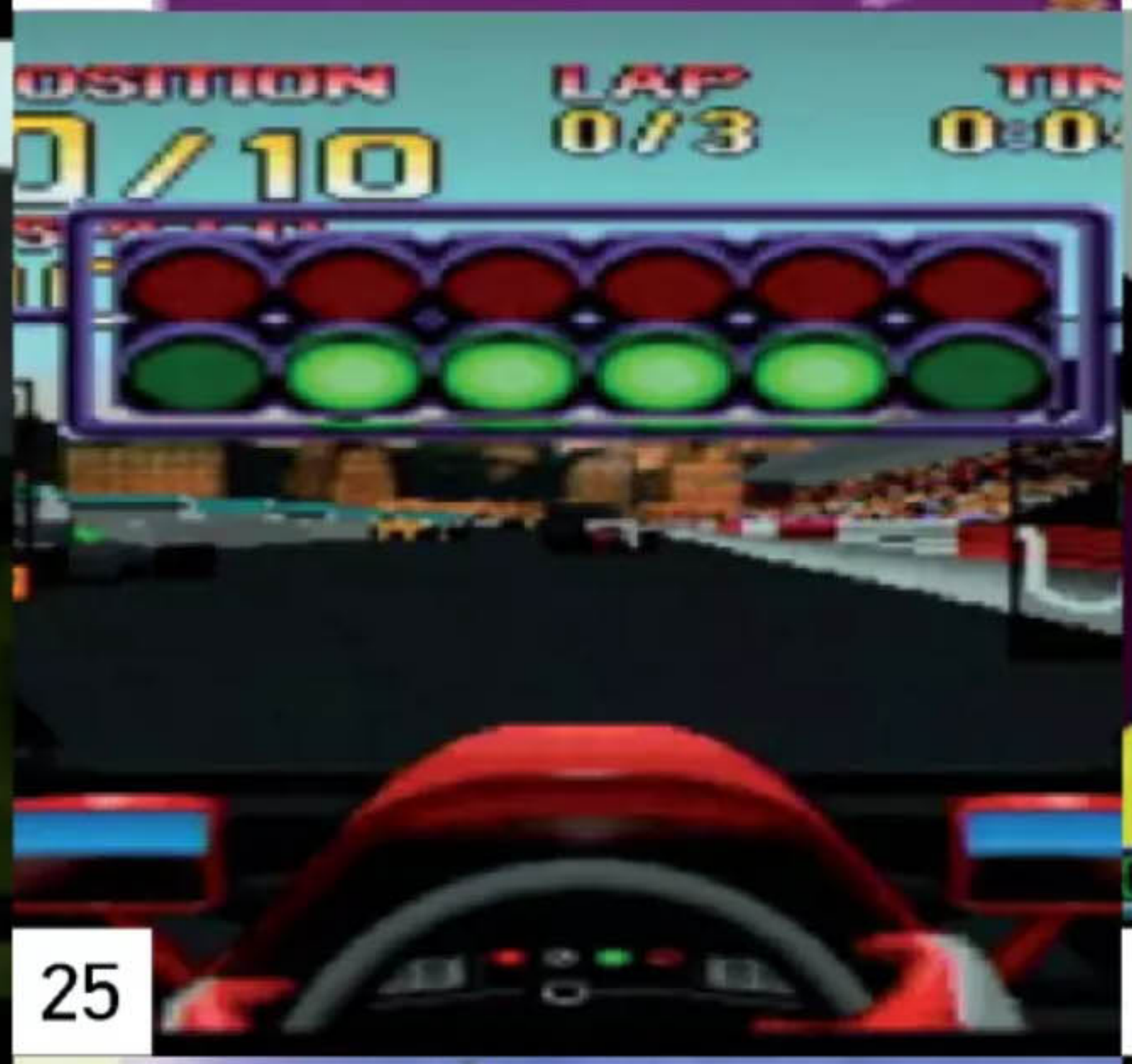
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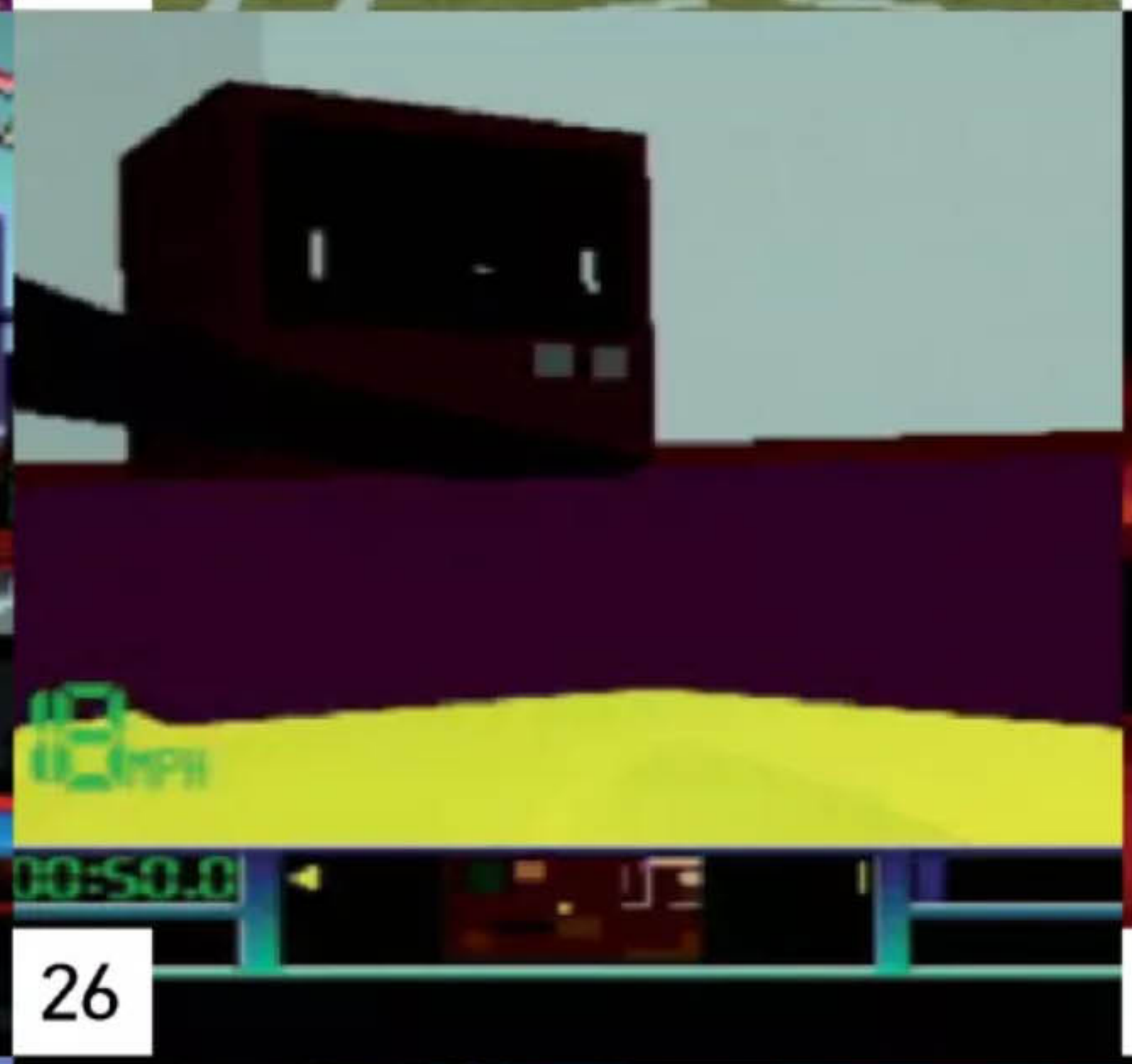
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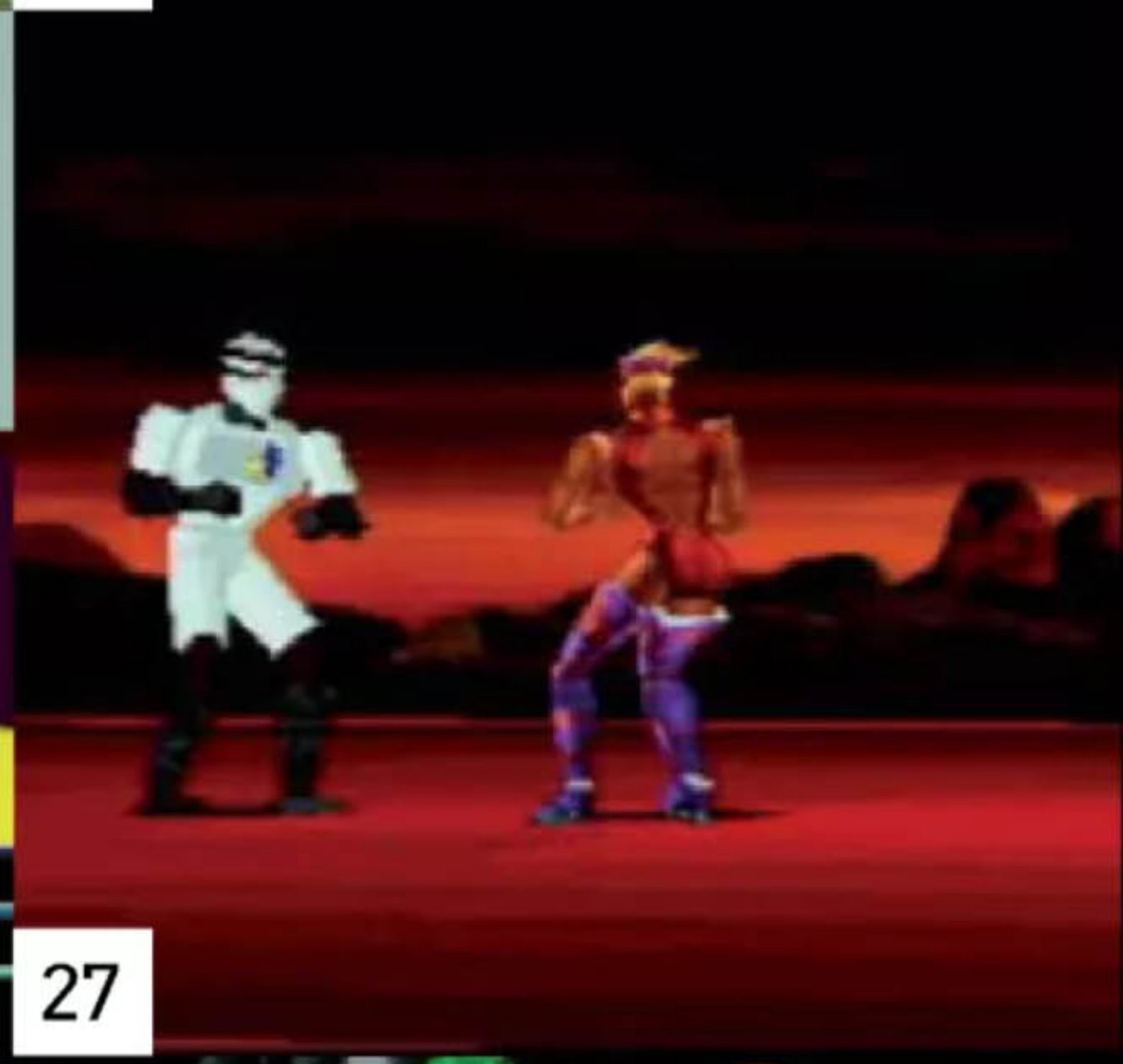

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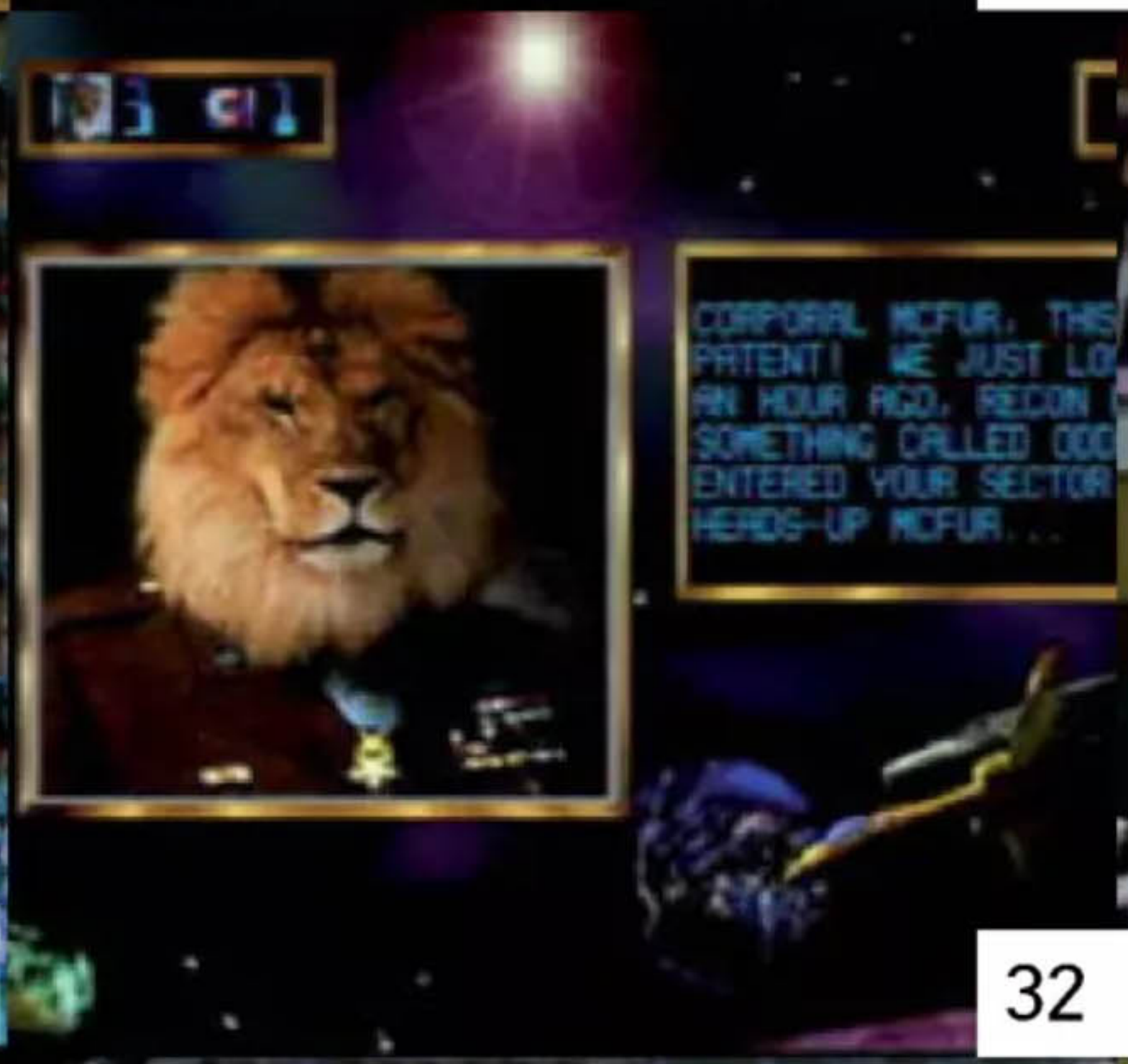
CORPORAL MCFUR. THIS
PATENT! WE JUST LO
AN HOUR AGO. RECON
SOMETHING CALLED ODD
ENTERED YOUR SECTOR
HEADS-UP MCFUR...

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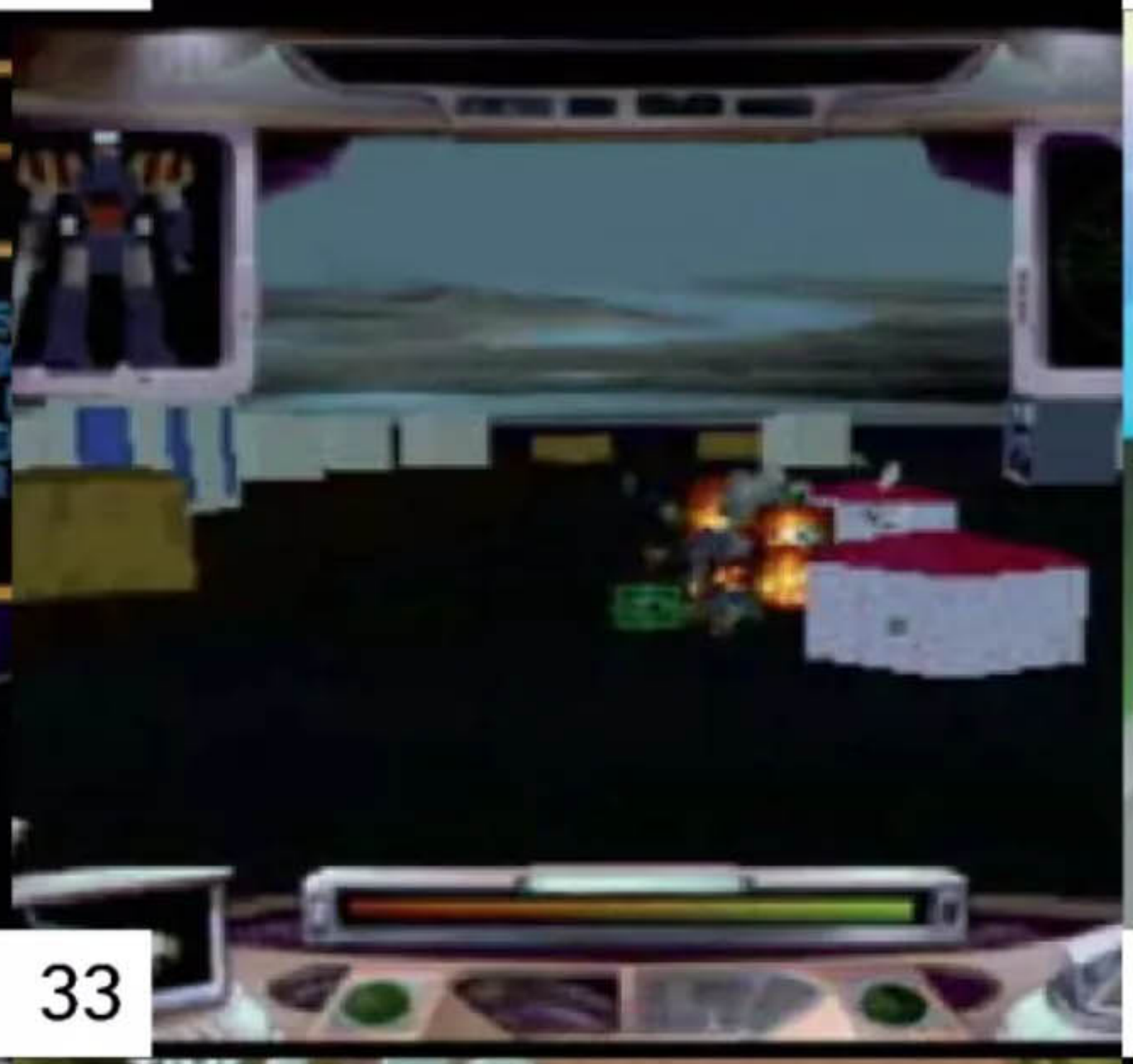

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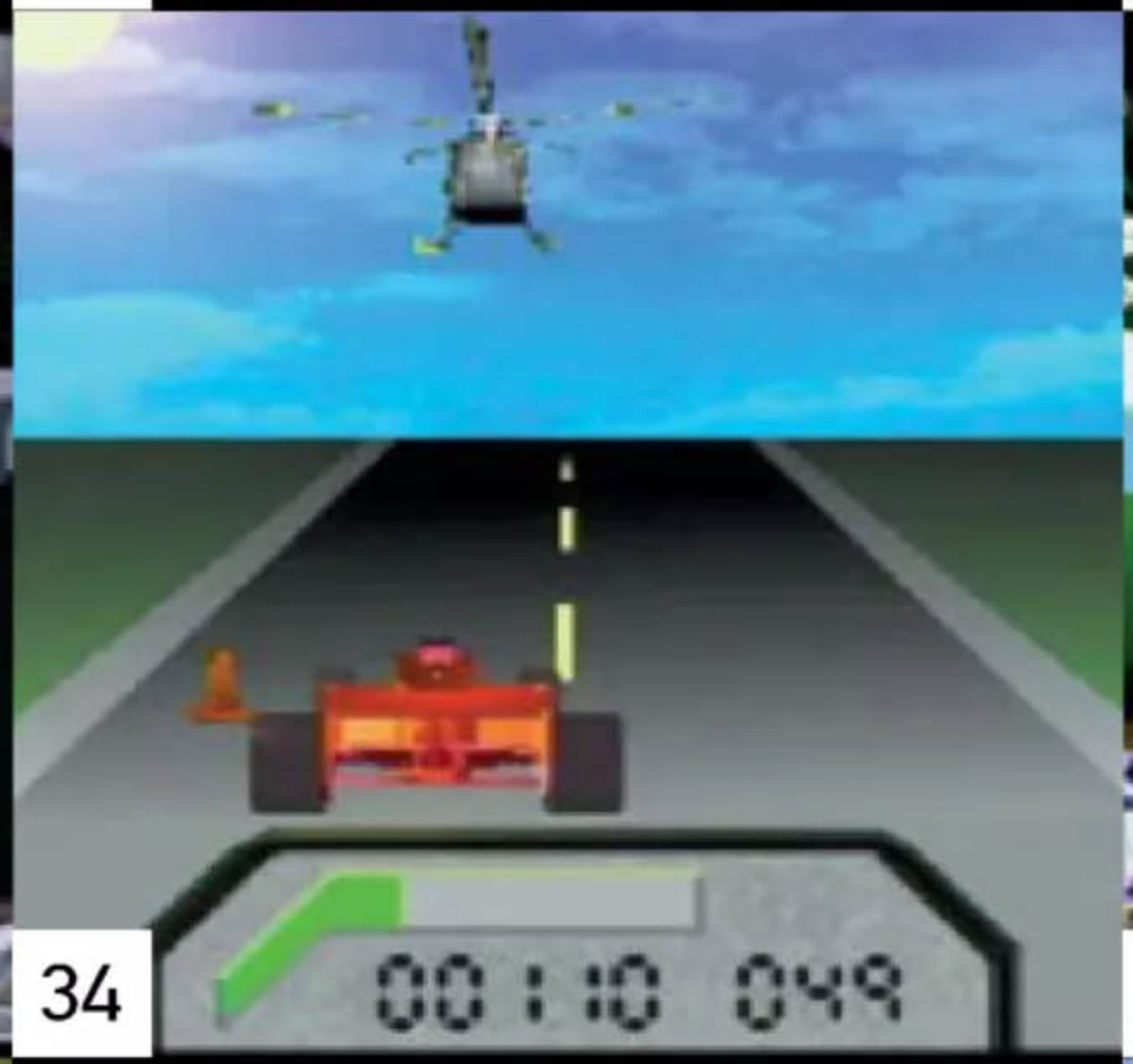

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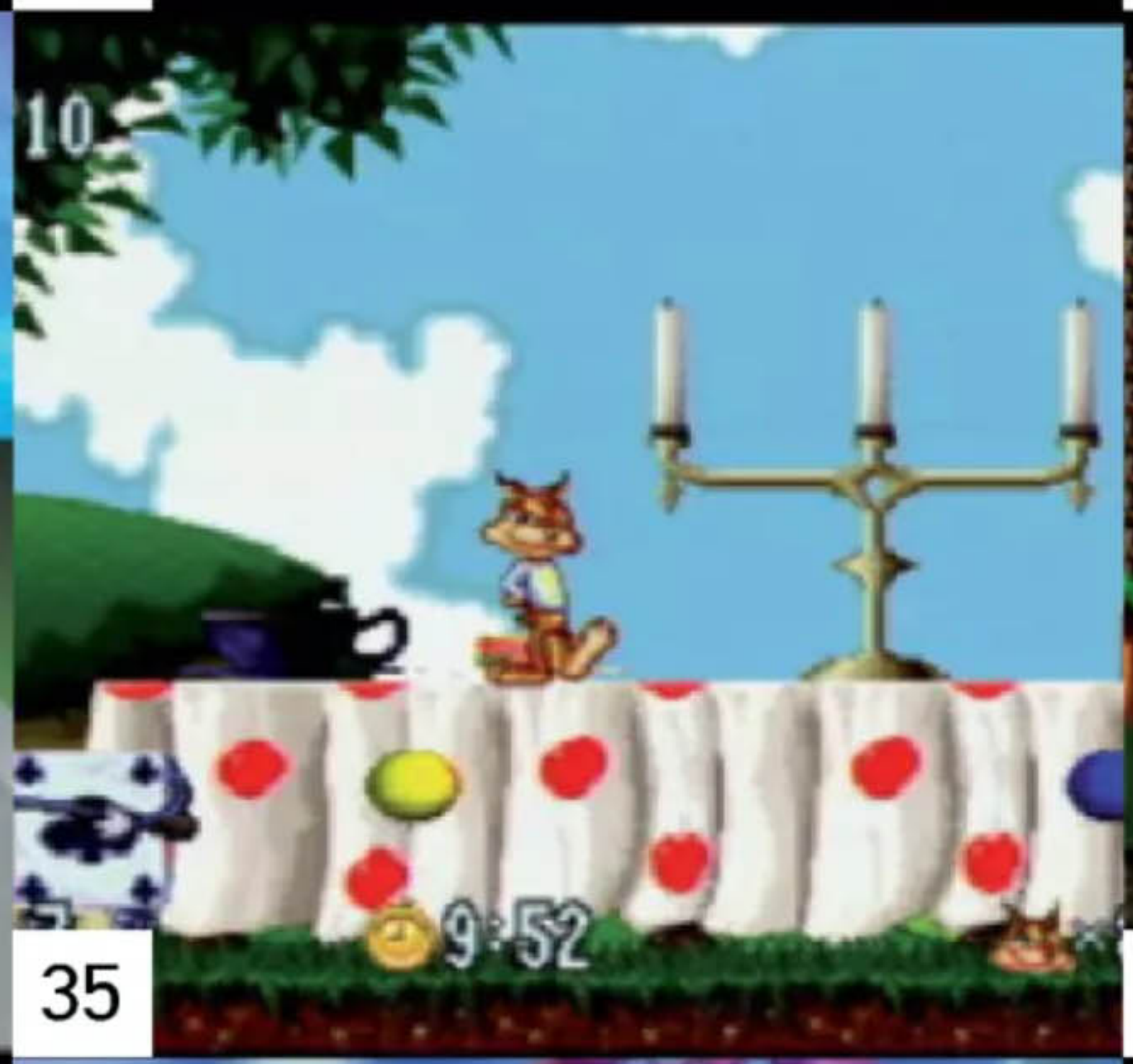

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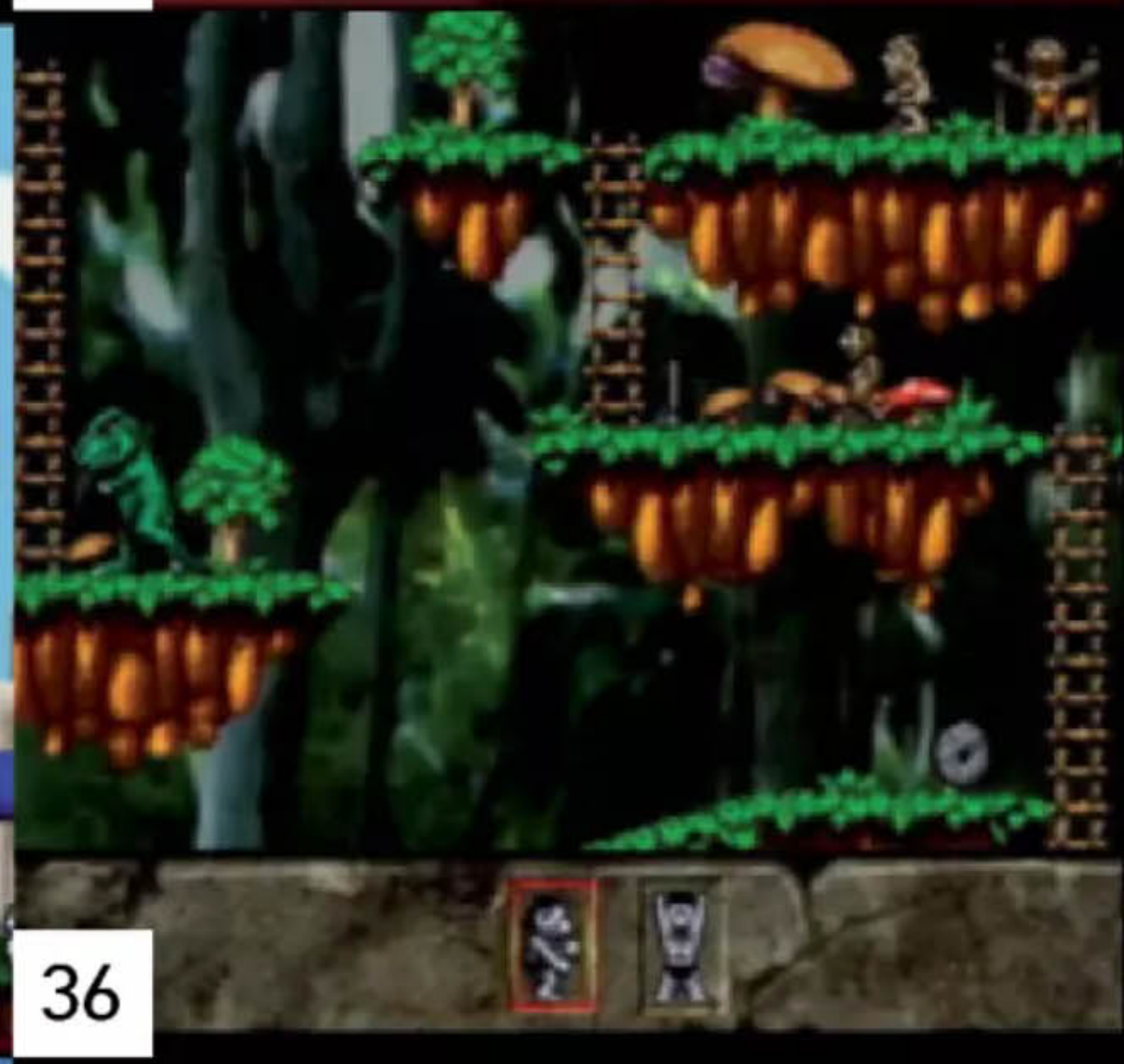

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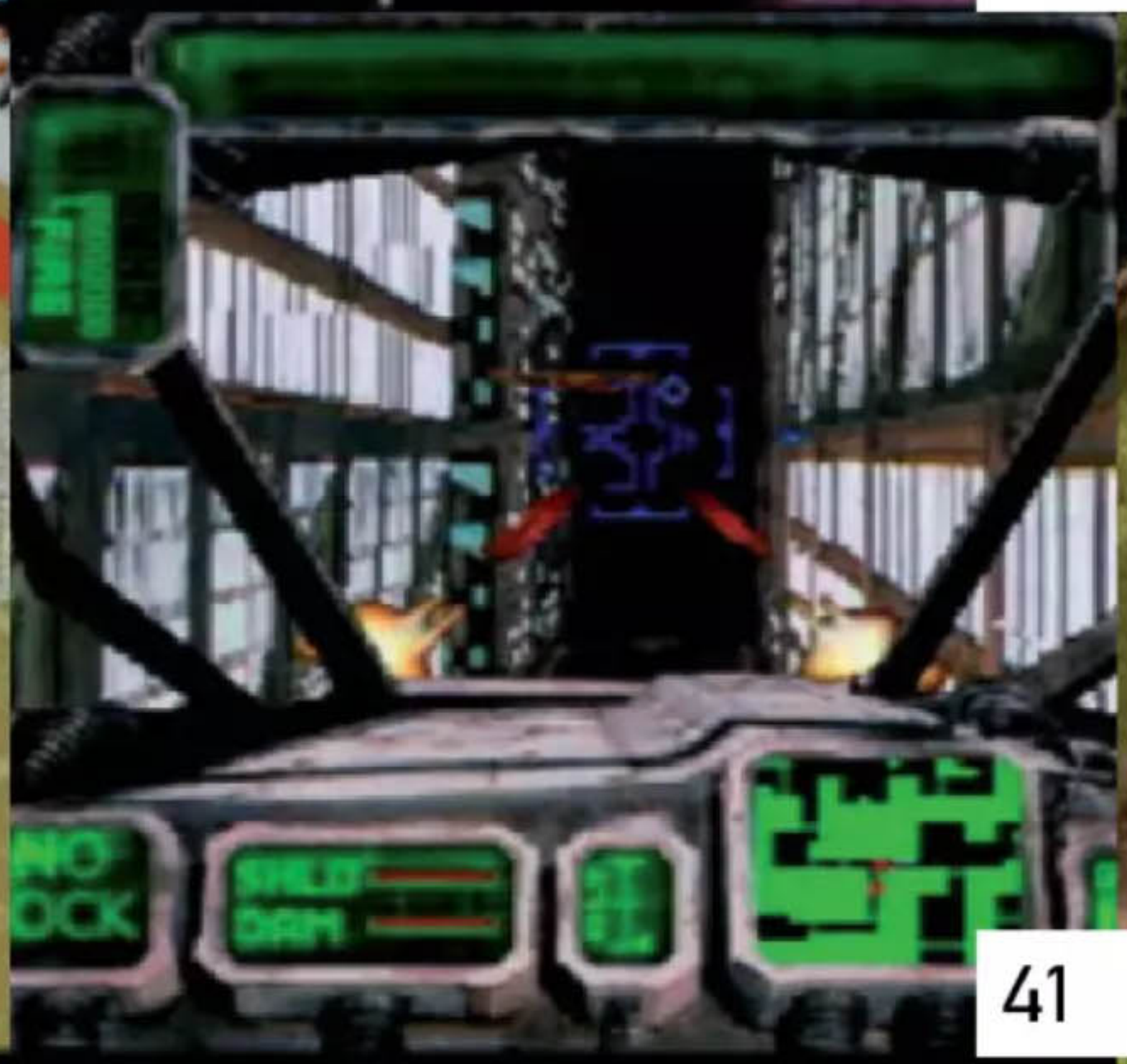

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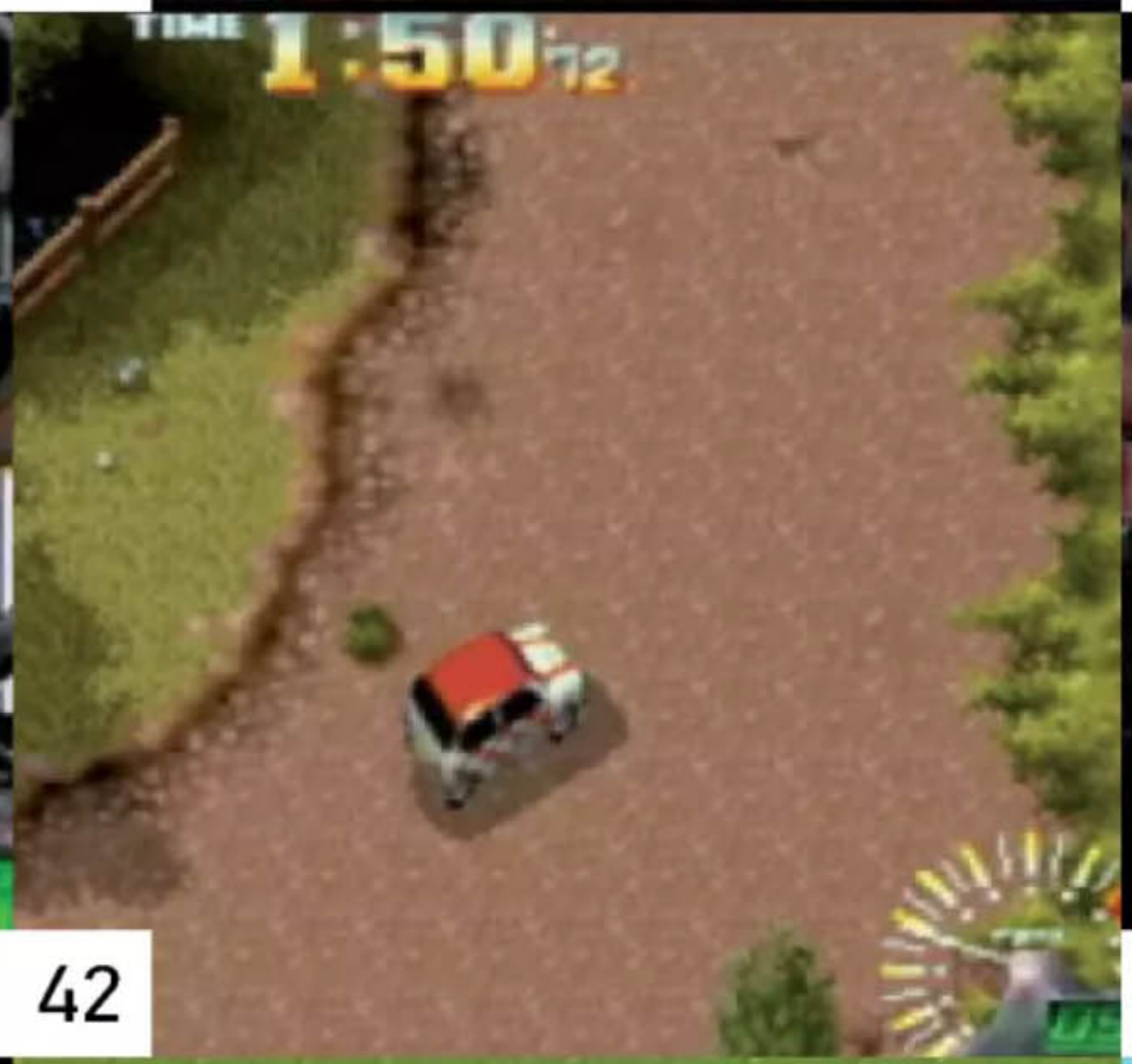

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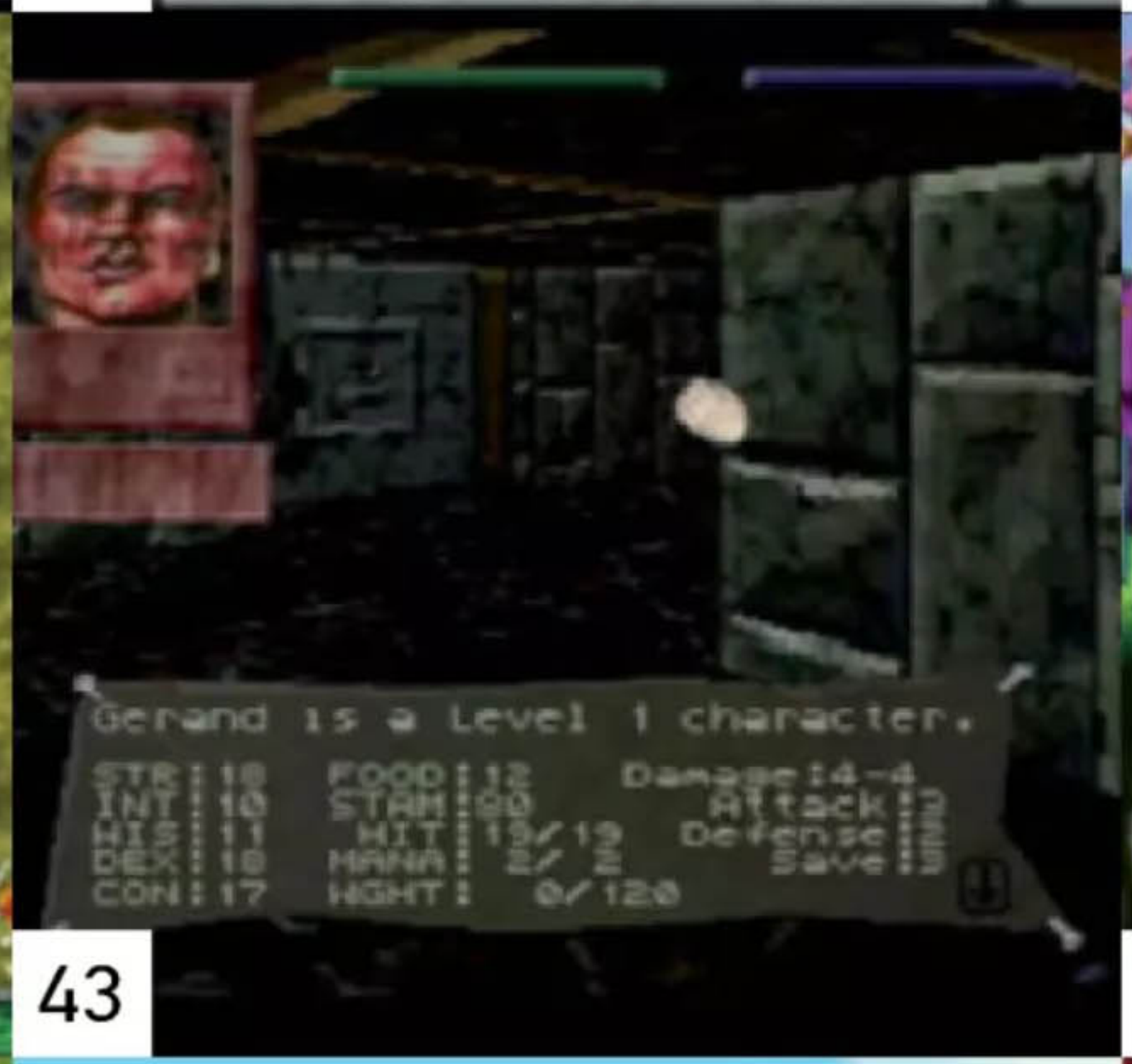
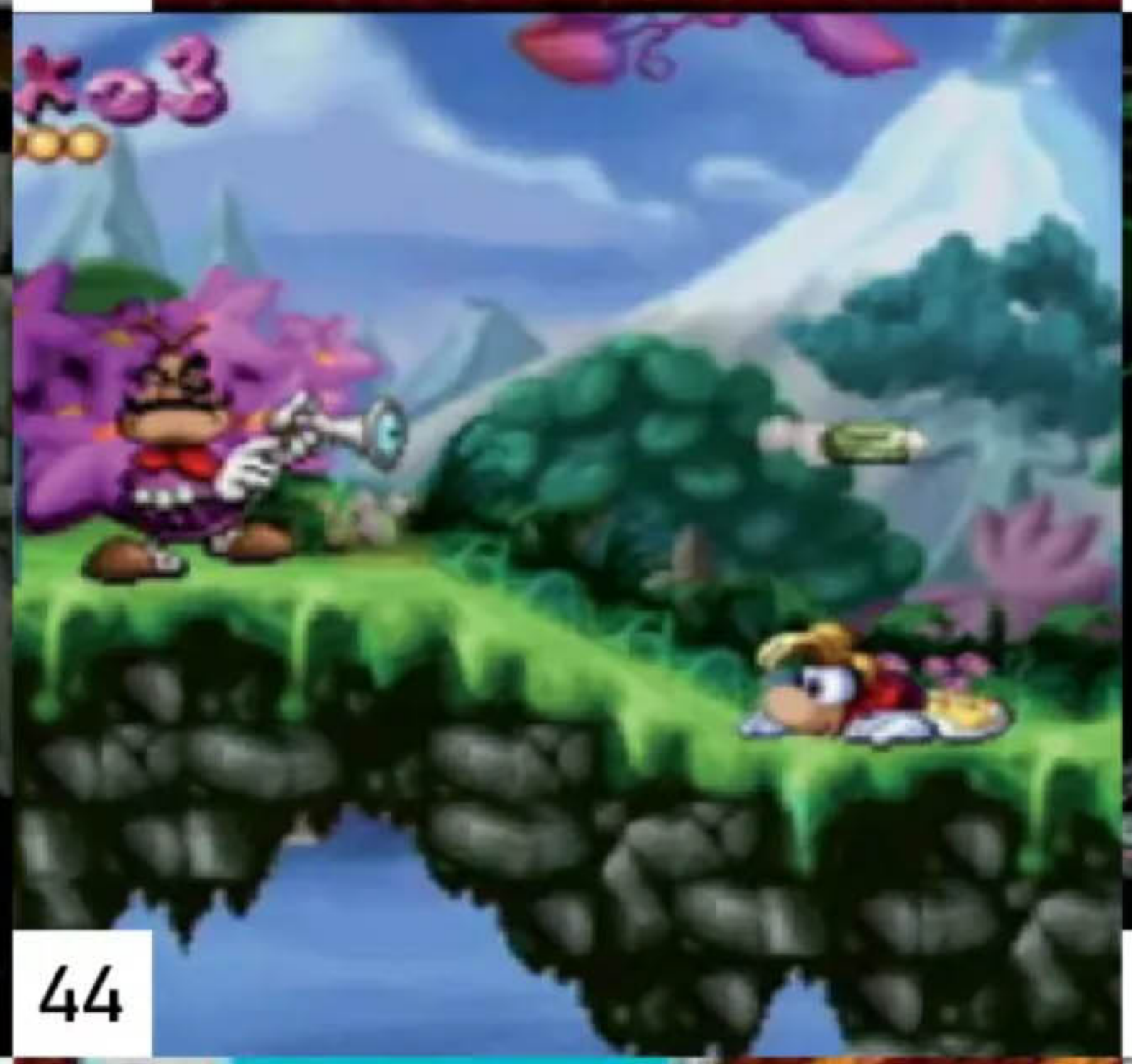

Gerand is a Level 1 character.

43



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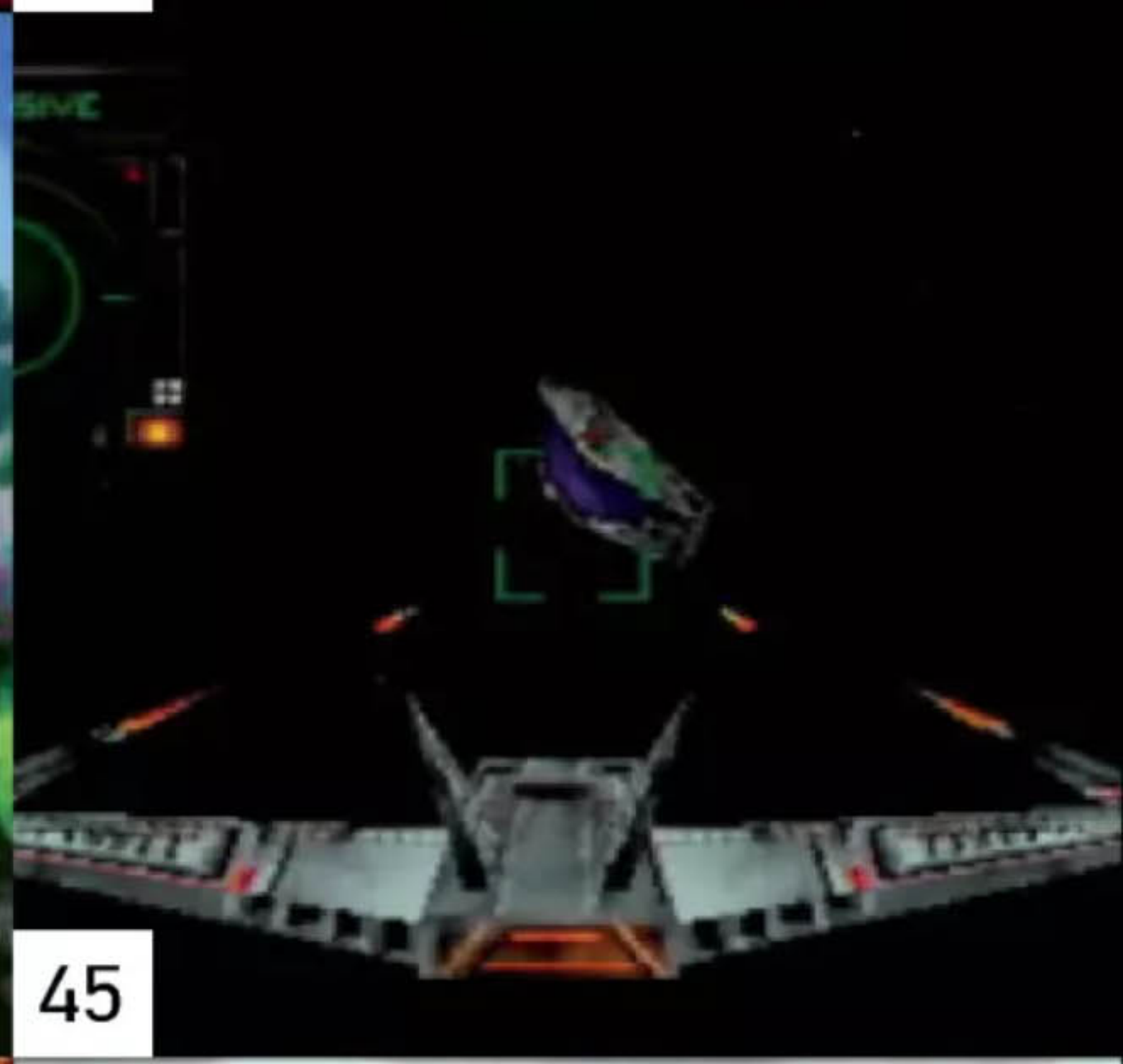

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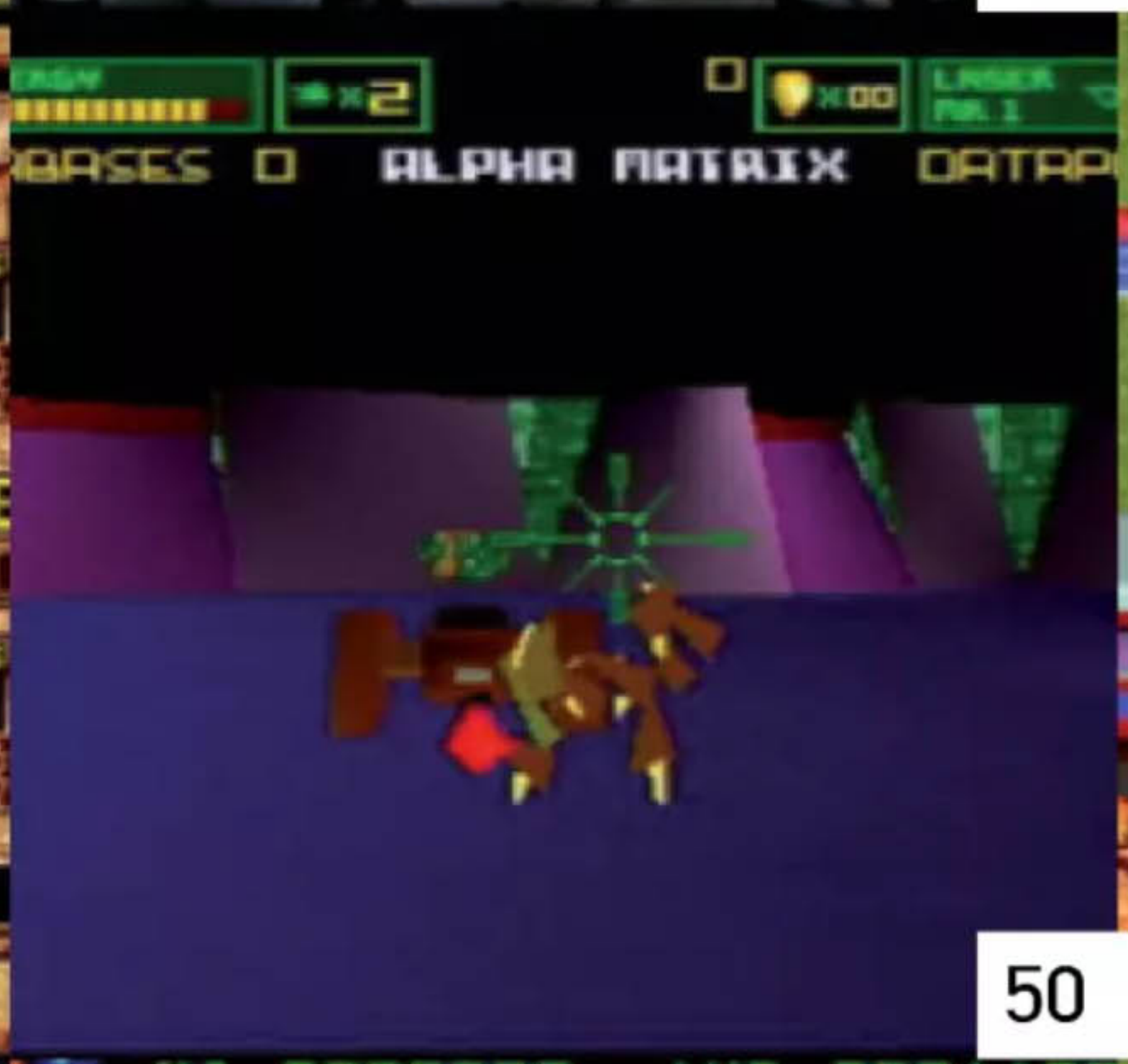
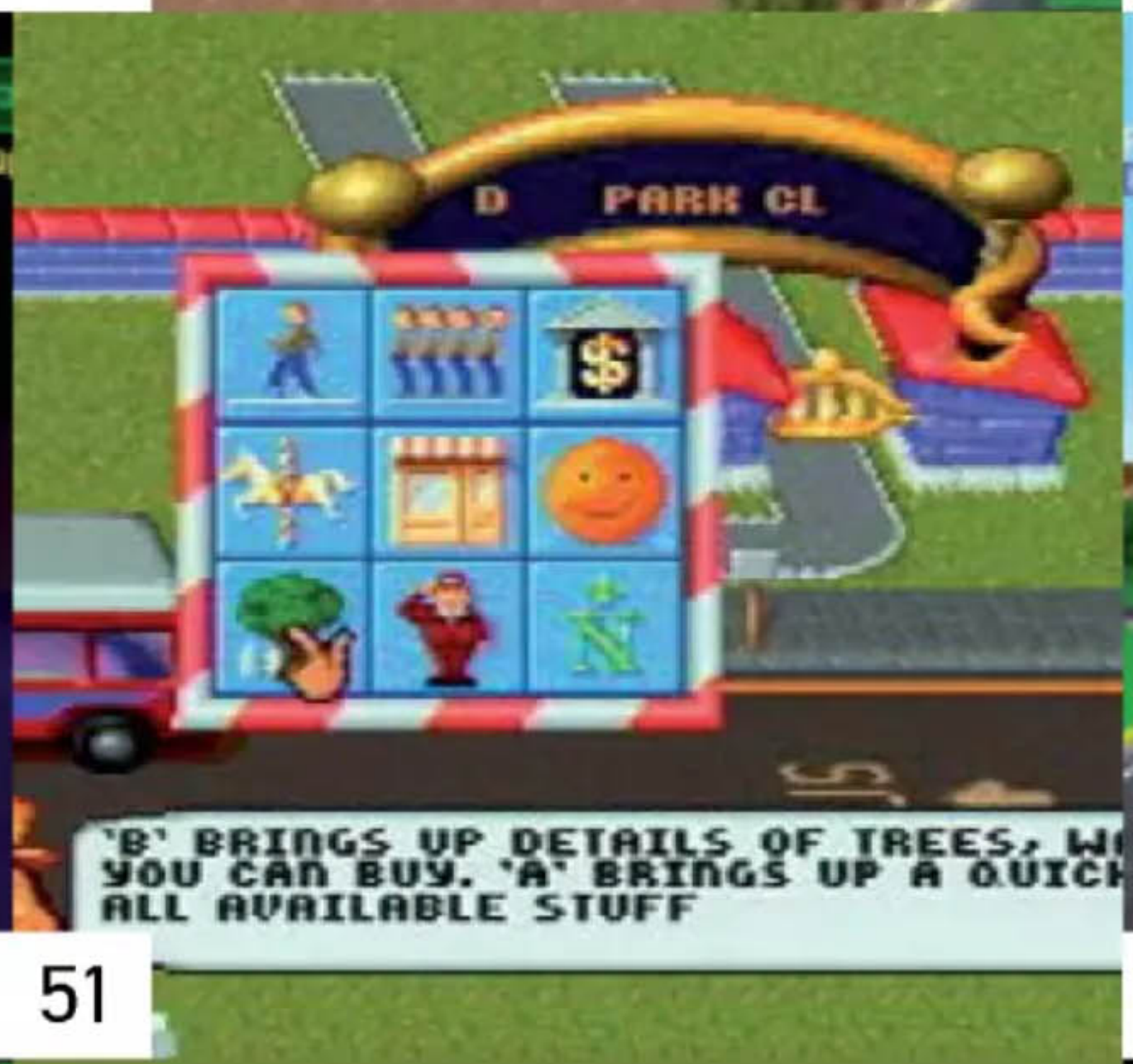
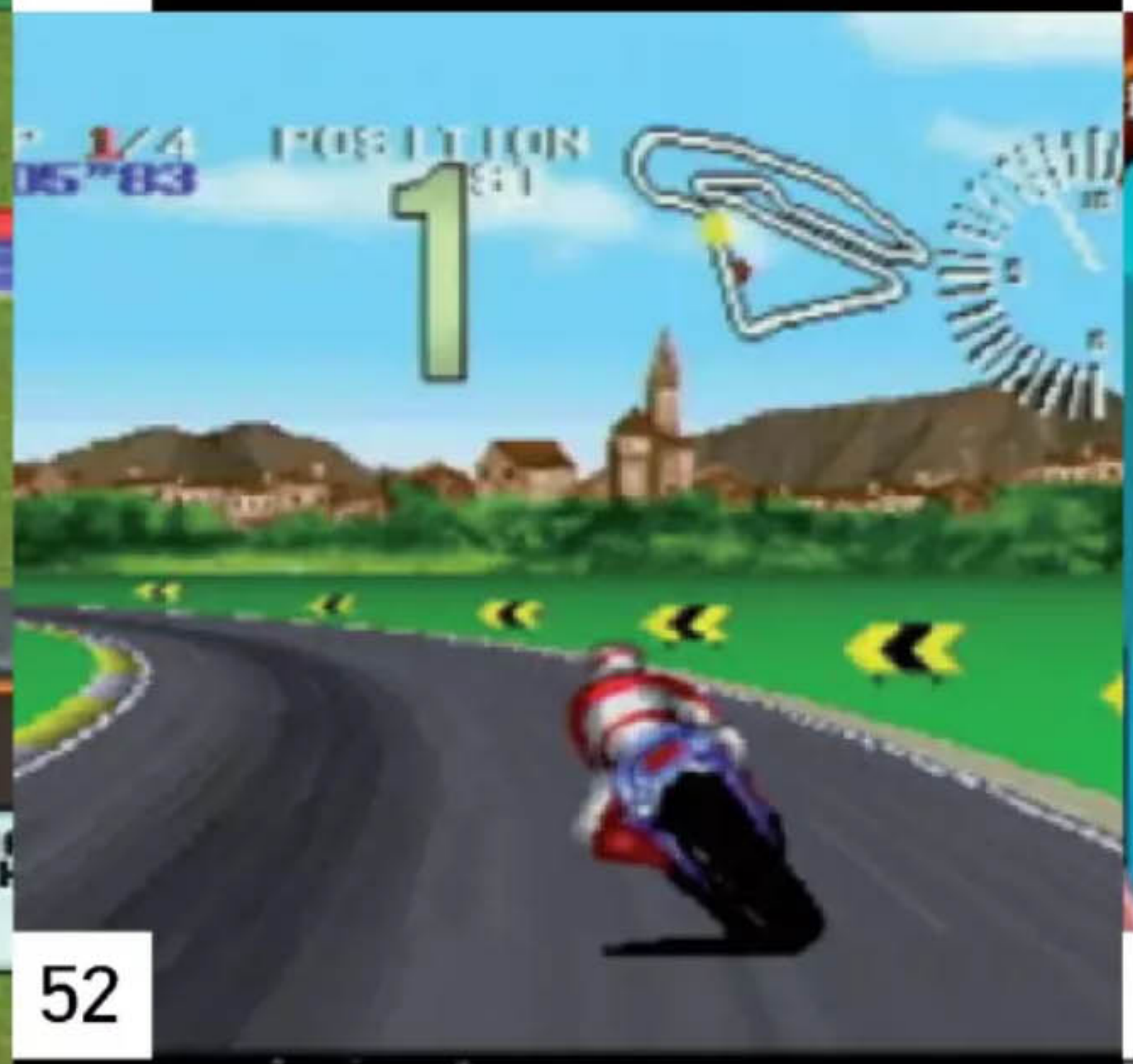

BASES 0
ALPHA MATRIX
DATAP

50



'B' BRINGS UP DETAILS OF TREES, WH
YOU CAN BUY. 'A' BRINGS UP A QUICK
ALL AVAILABLE STUFF

51



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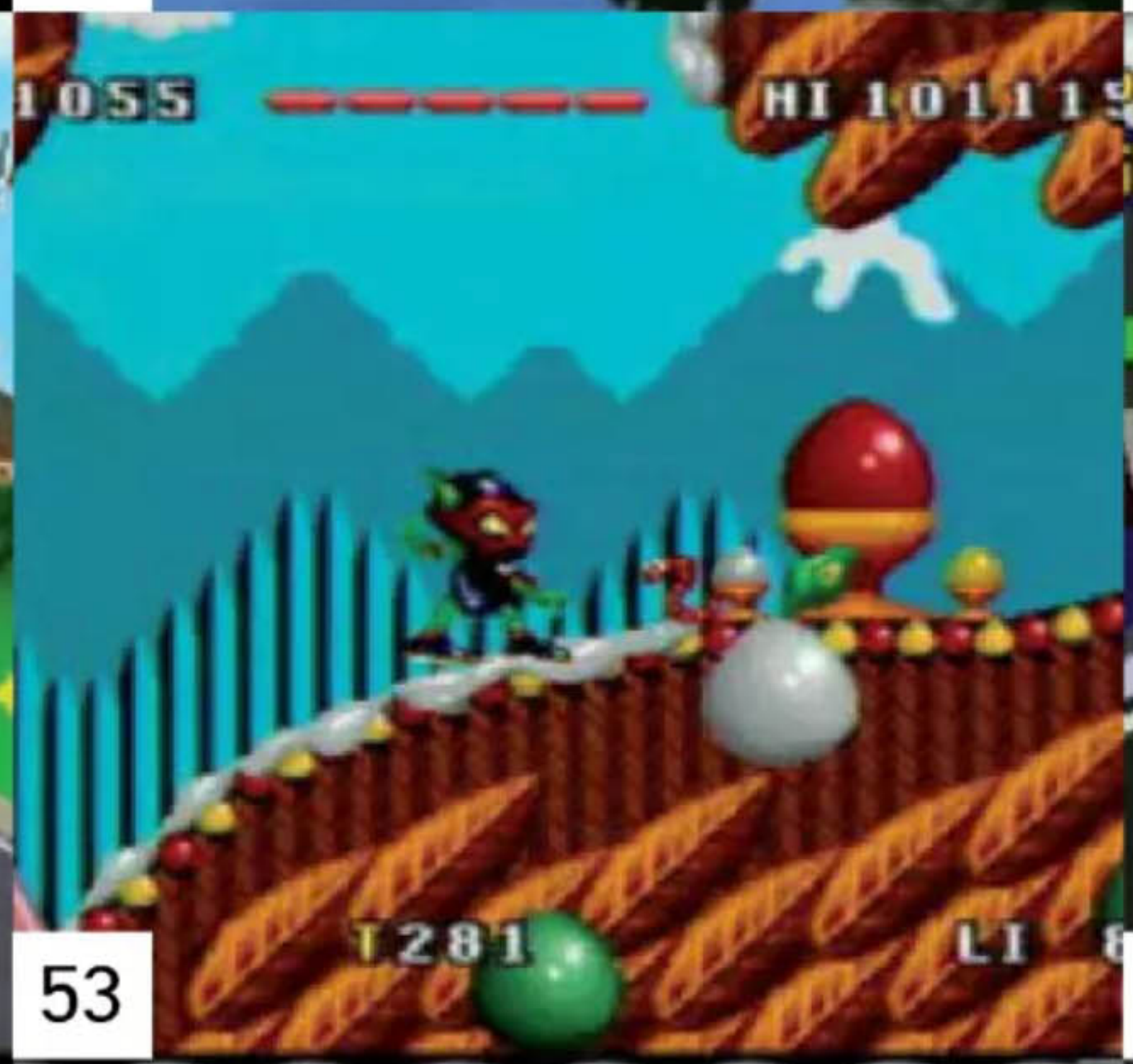
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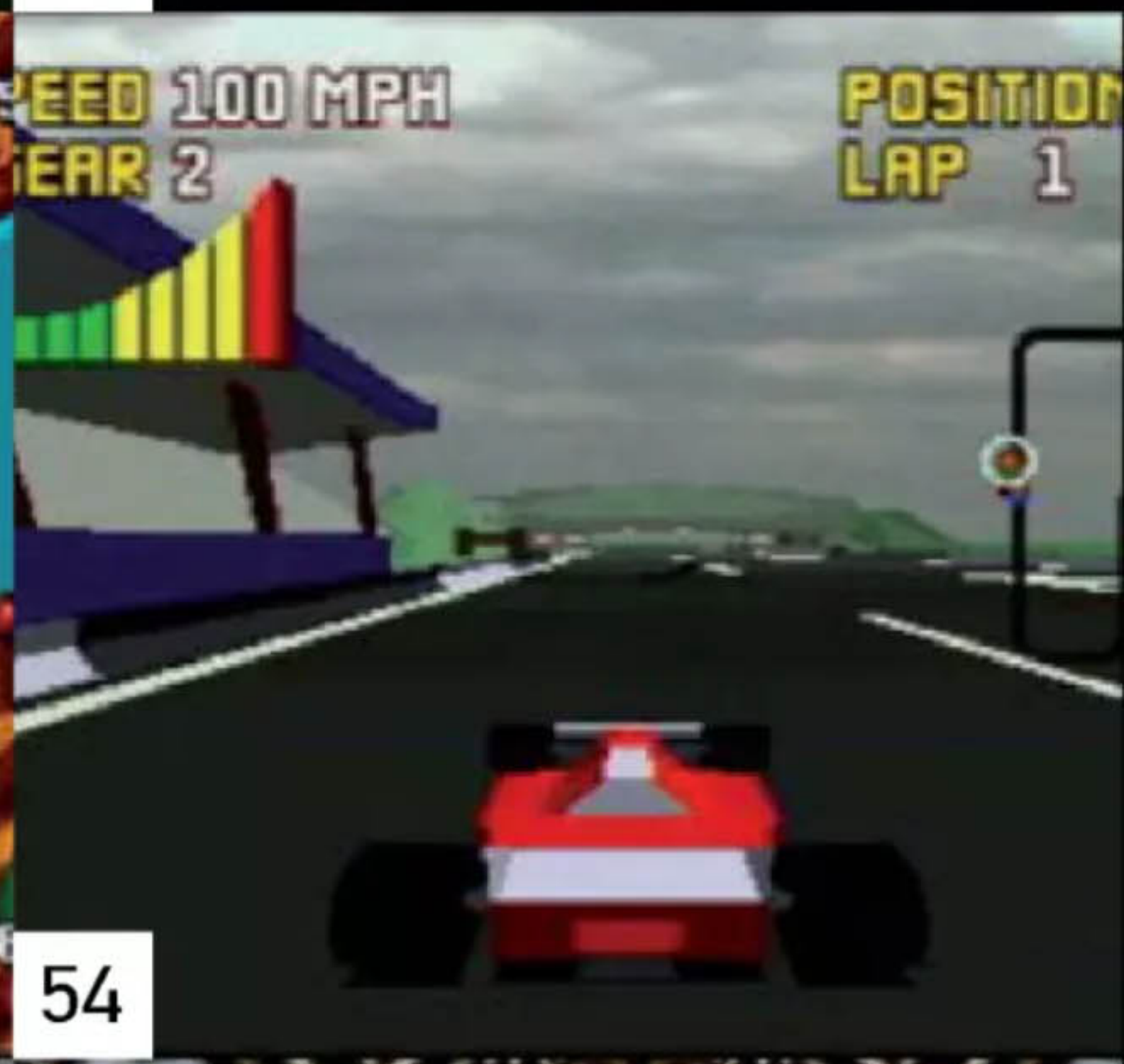
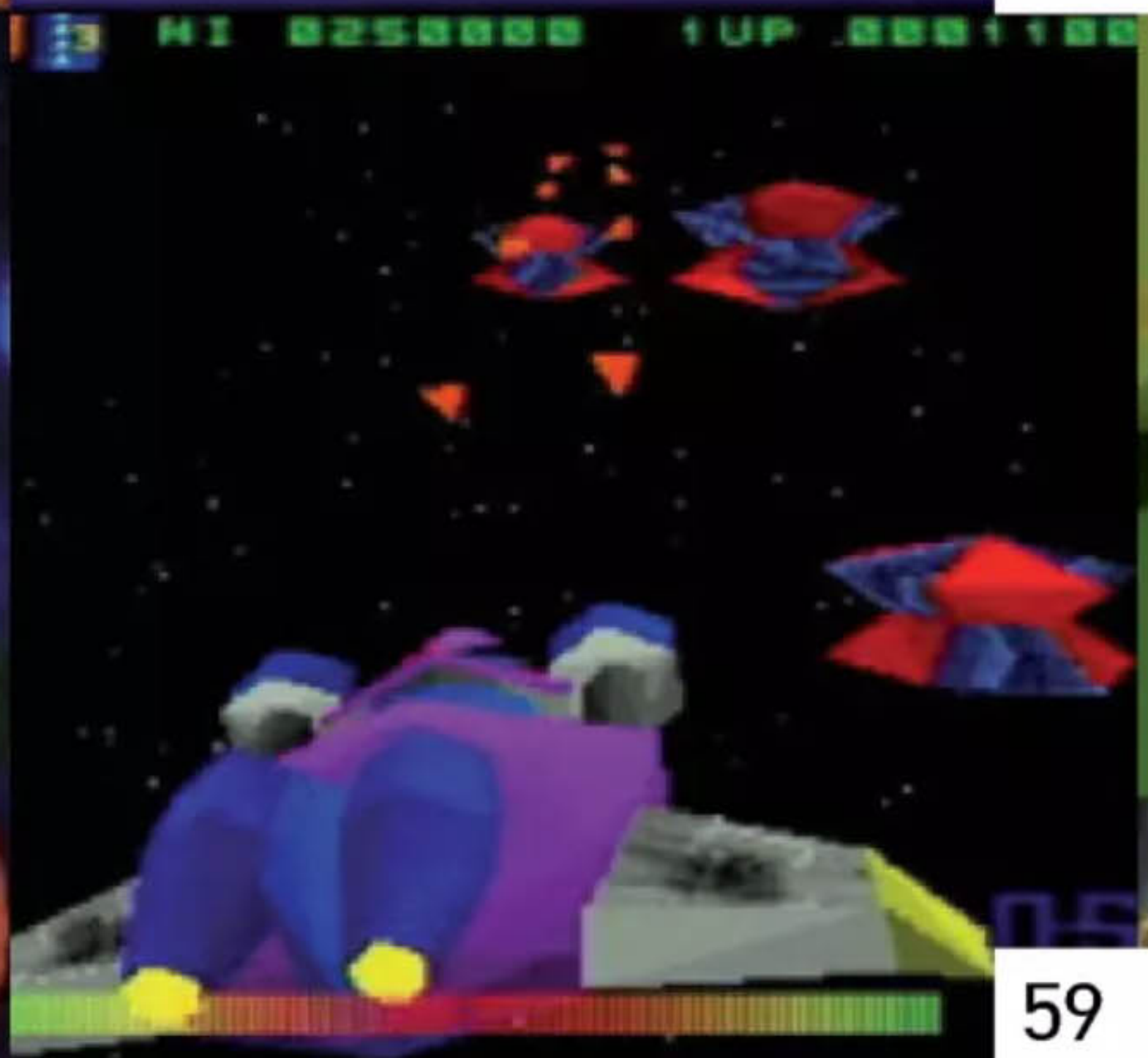
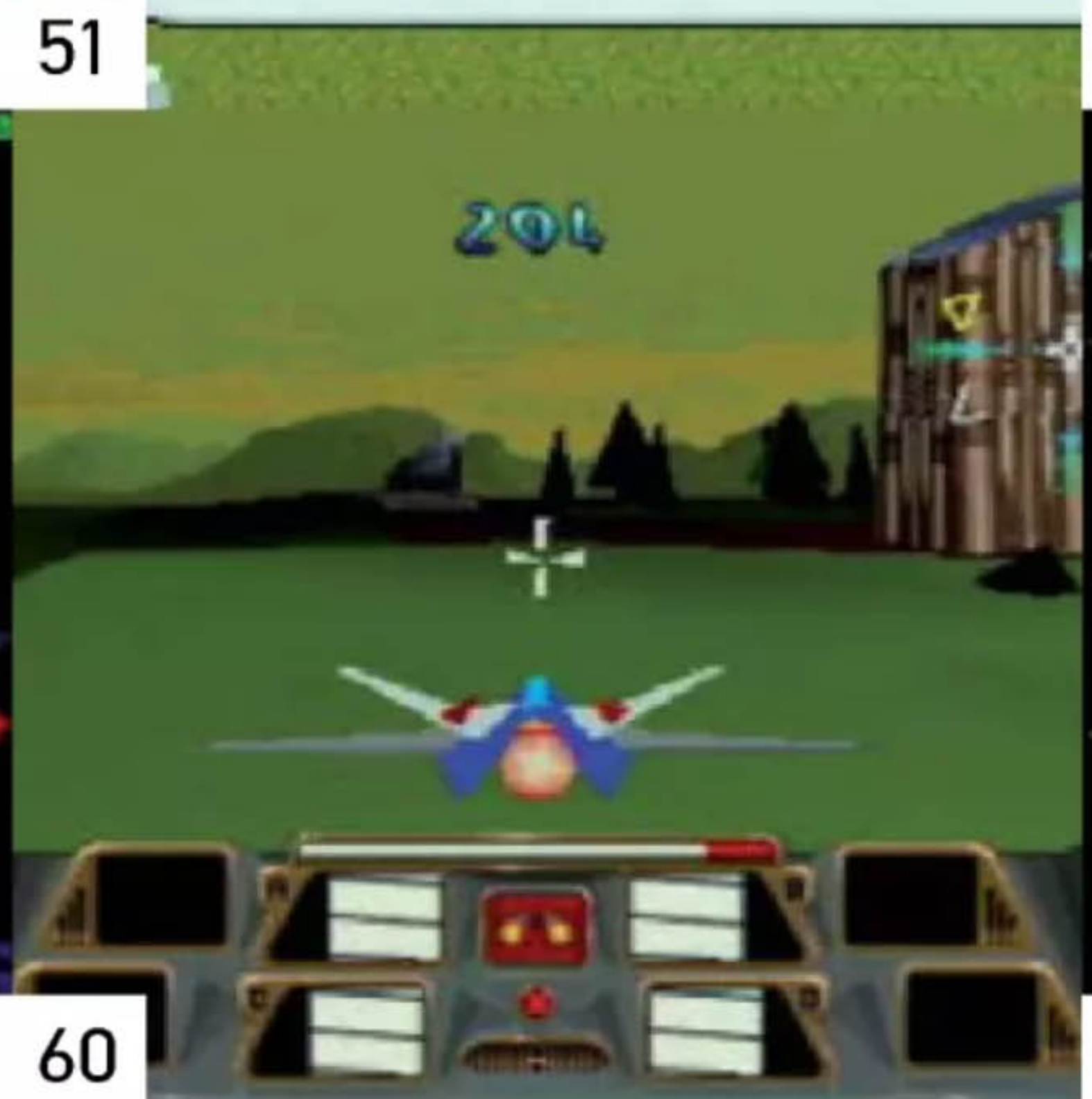

EED 100 MPH
EAR 2
POSITION
LAP 1

54


HI 0250000
1UP 0001100

59



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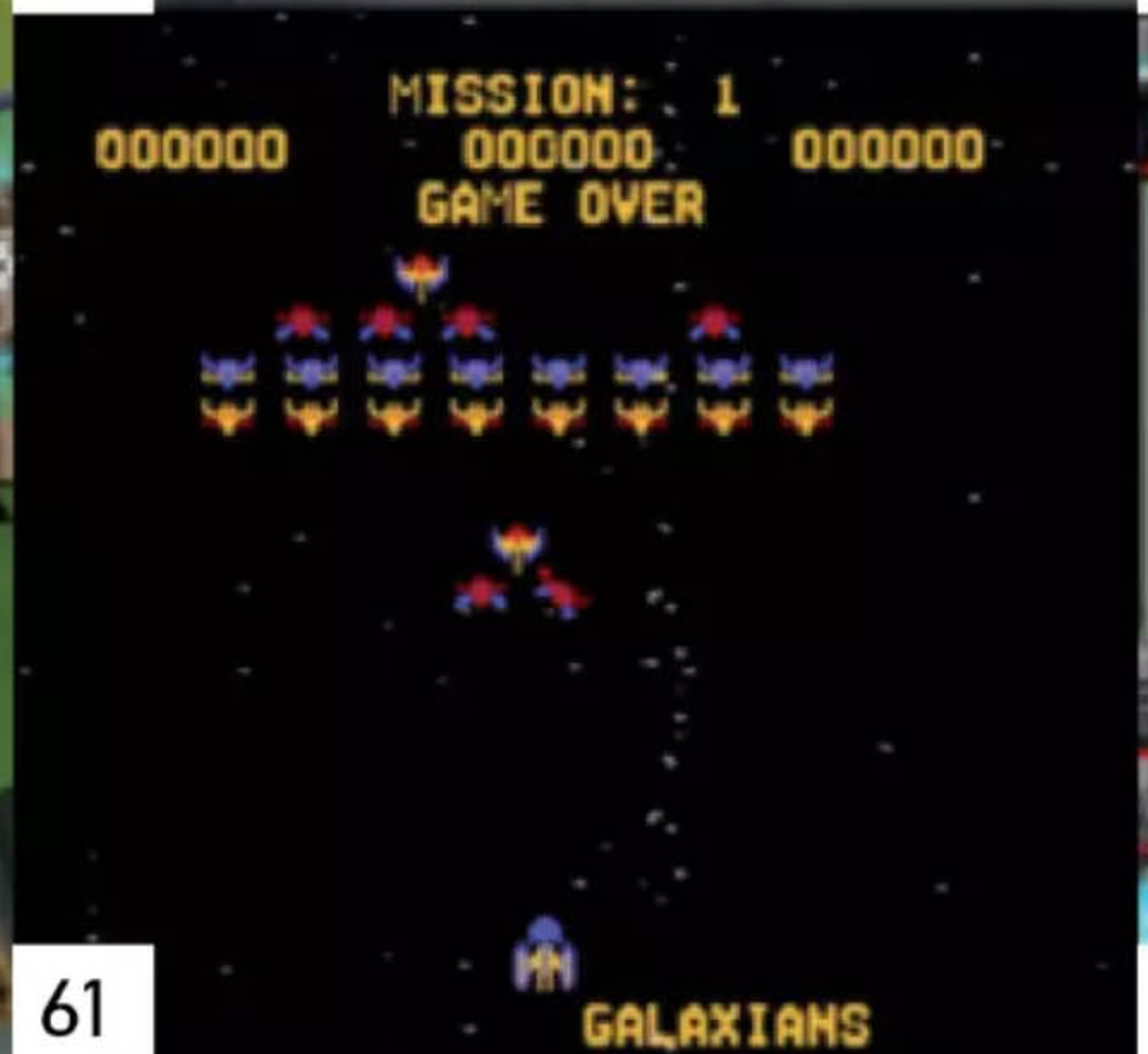
MISSION: 1
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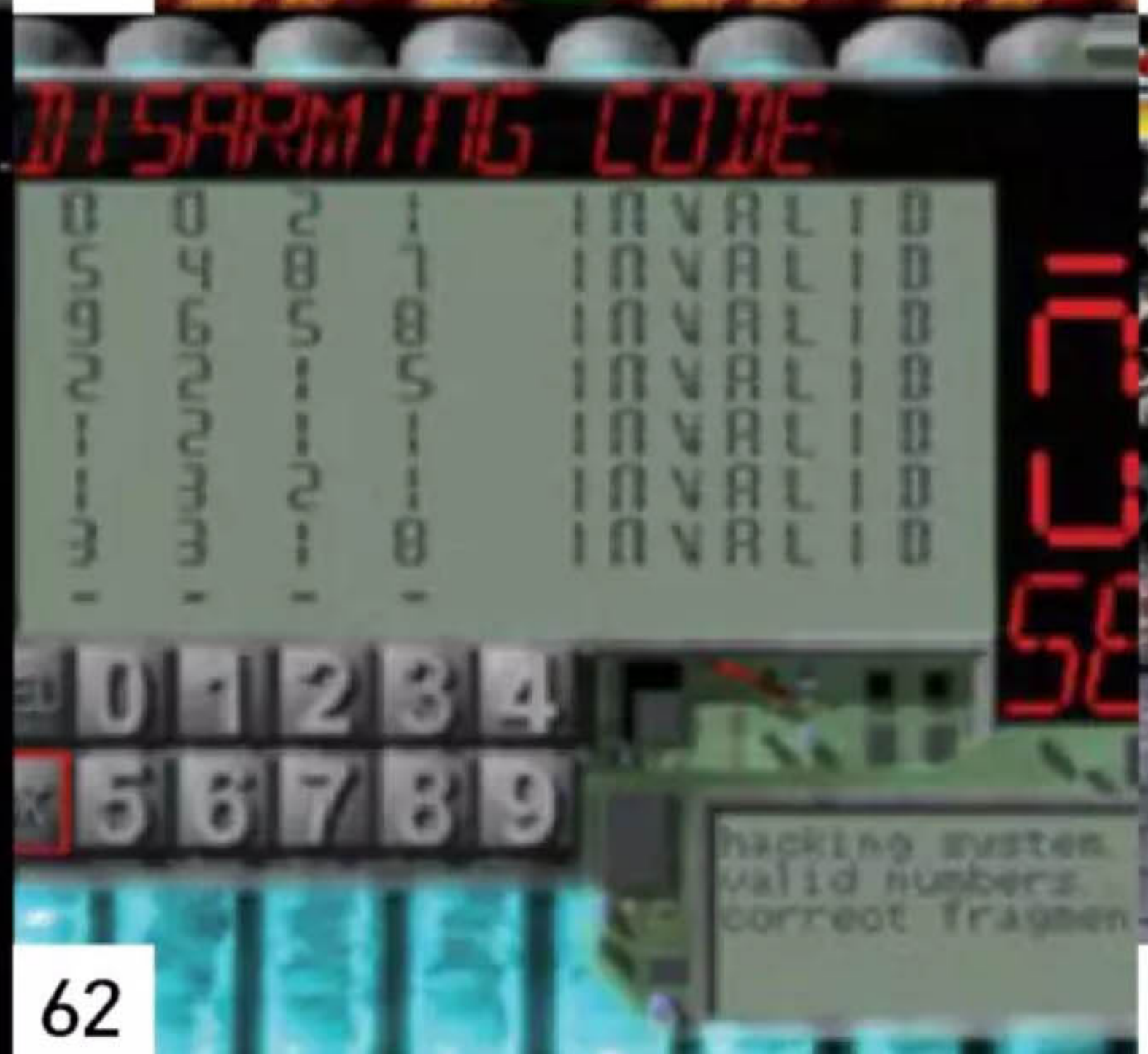
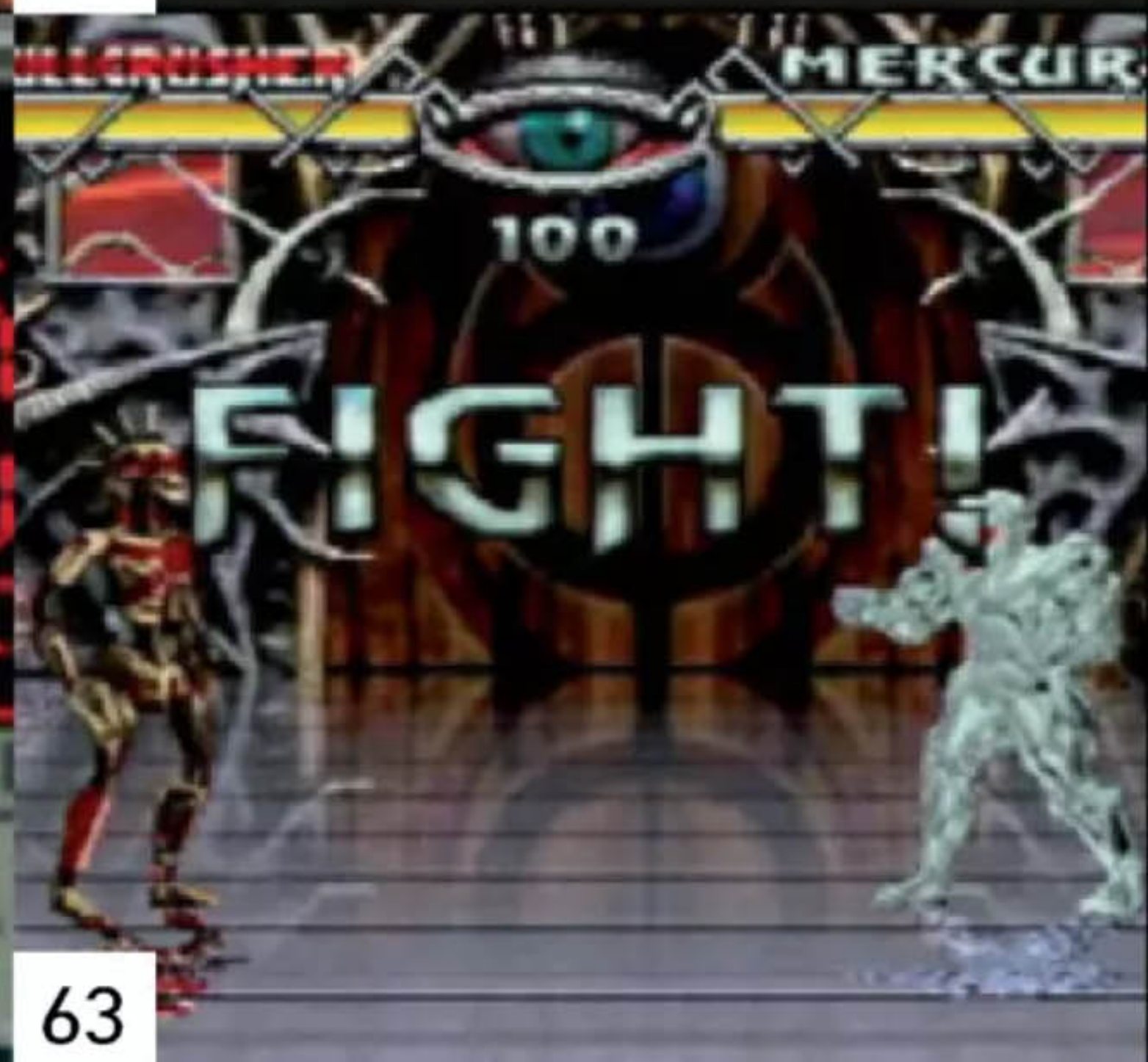
000000
000000
GAME OVER
GALAXIANS

61


DISARMING CODE
INVALID
0 1 2 3 4
5 6 7 8 9

62


MERCU
100
FIGHT!

63

The developers

THE PEOPLE OF ATARI INC AND ATARI CORP WERE JUST AS IMPORTANT AS THE PLACES WHERE THEY WORKED. WE SPEAK TO THOSE THAT HELPED DEFINE BOTH COMPANIES

72 **Atari Inc**
Discover how Nolan Bushnell and Ted Dabney kickstarted gaming way back at the start of Atari

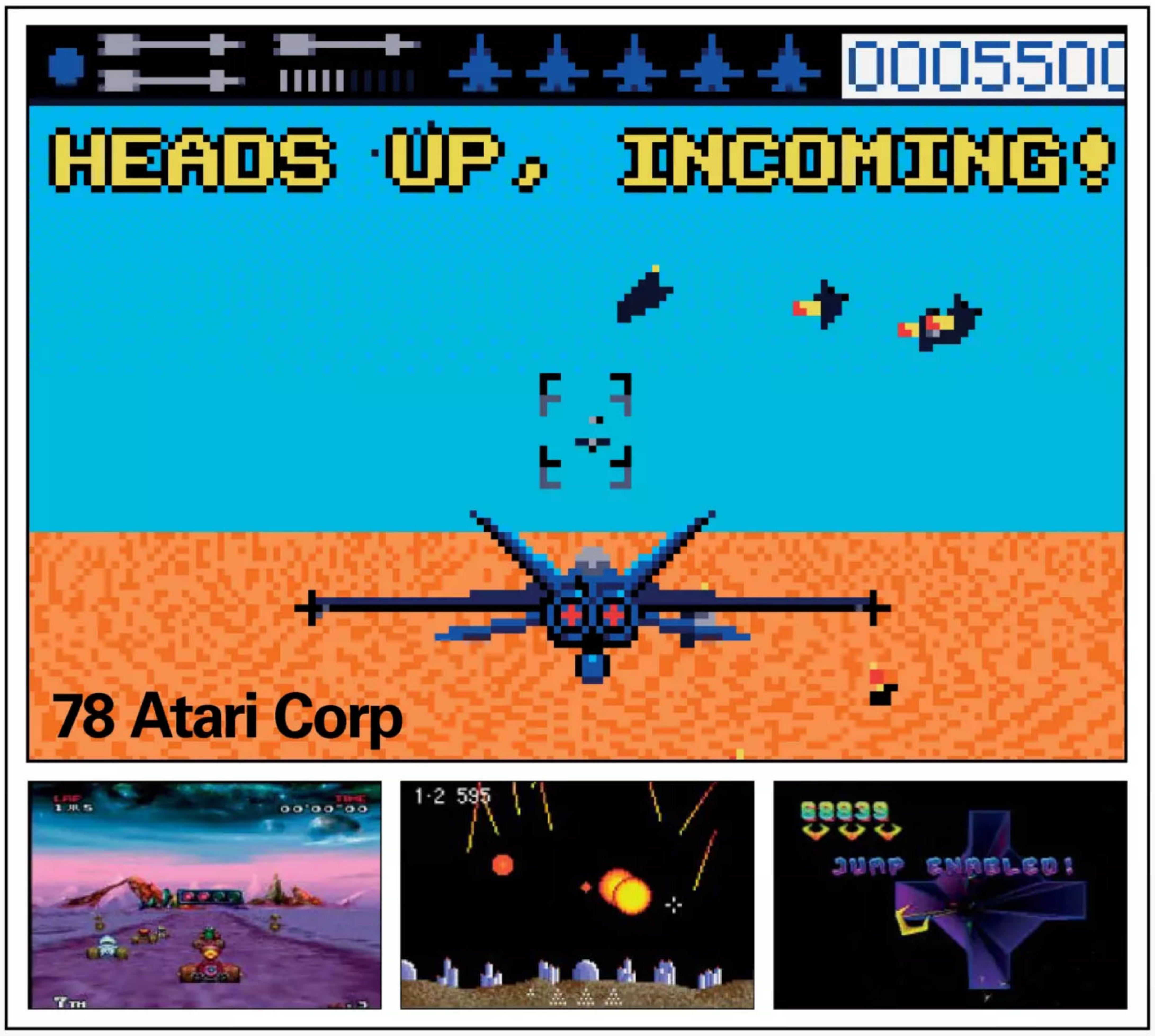
78 **Atari Corporation**
How Jack Tramiel made Atari rise Phoenix-like from its own ashes and reclaim fame

84 **Nolan Bushnall**
The co-founder of Atari Inc looks back at the highs and lows during his impressive career

88 **Ed Logg**
We speak to the man with 30 years of experience and a track record that includes Asteroids and Centipede

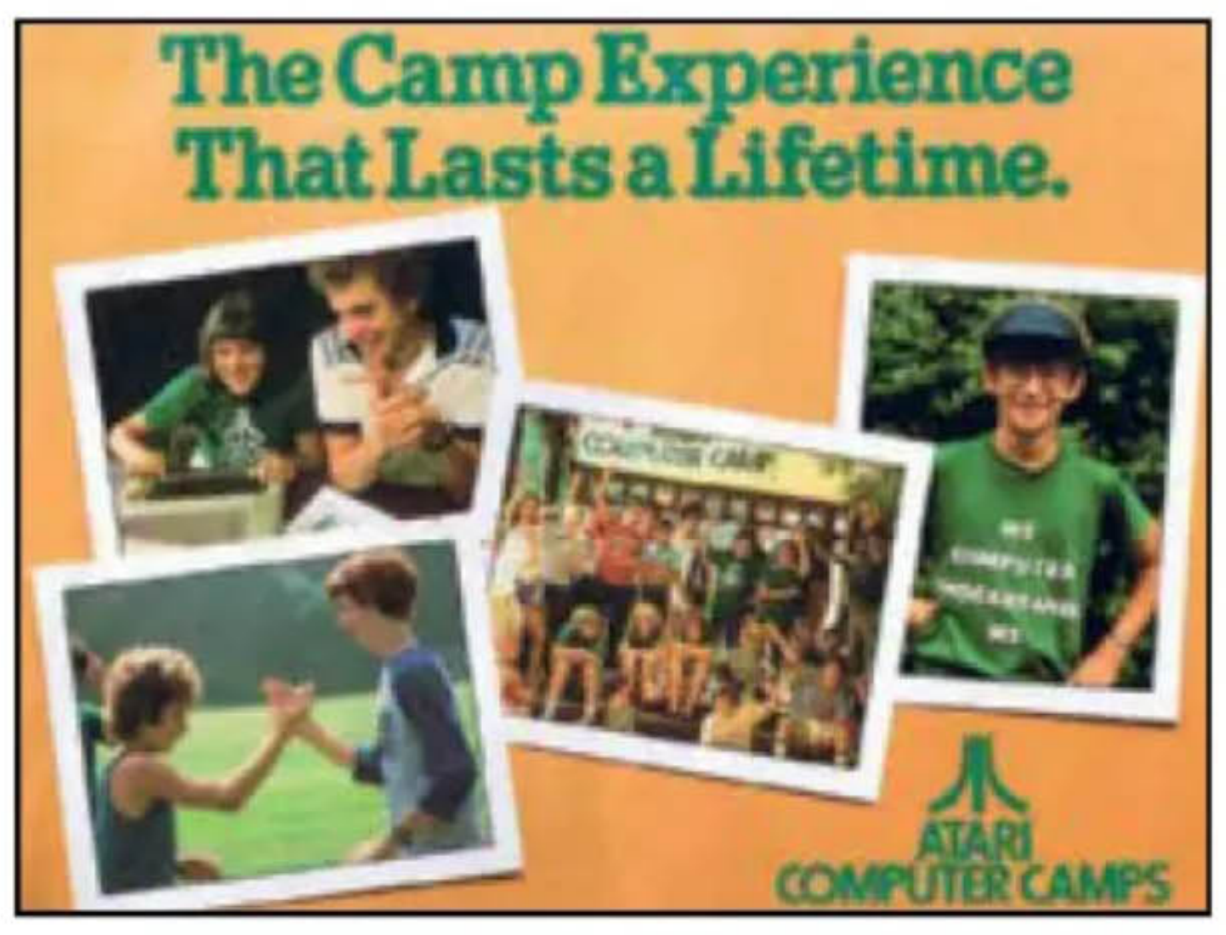
94 **Howard Scott Warshaw**
The popular Atari developer on E.T. Indiana Jones and Yar's Revenge

98 **David Crane**
The co-founder of Activision on Atari, Pitfall! and tennis

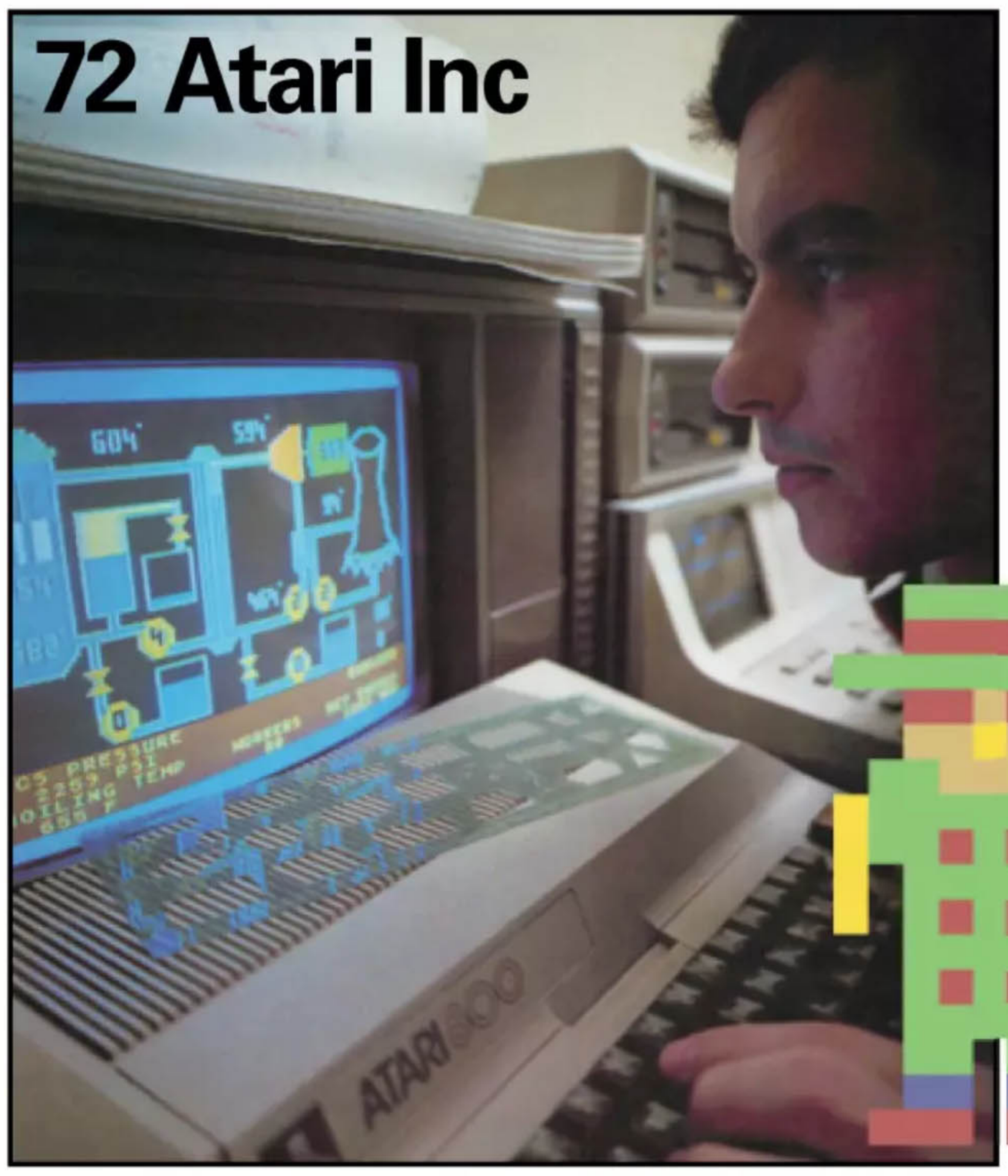


0005500
HEADS UP, INCOMING!
JUMP ENABLED!

78 Atari Corp



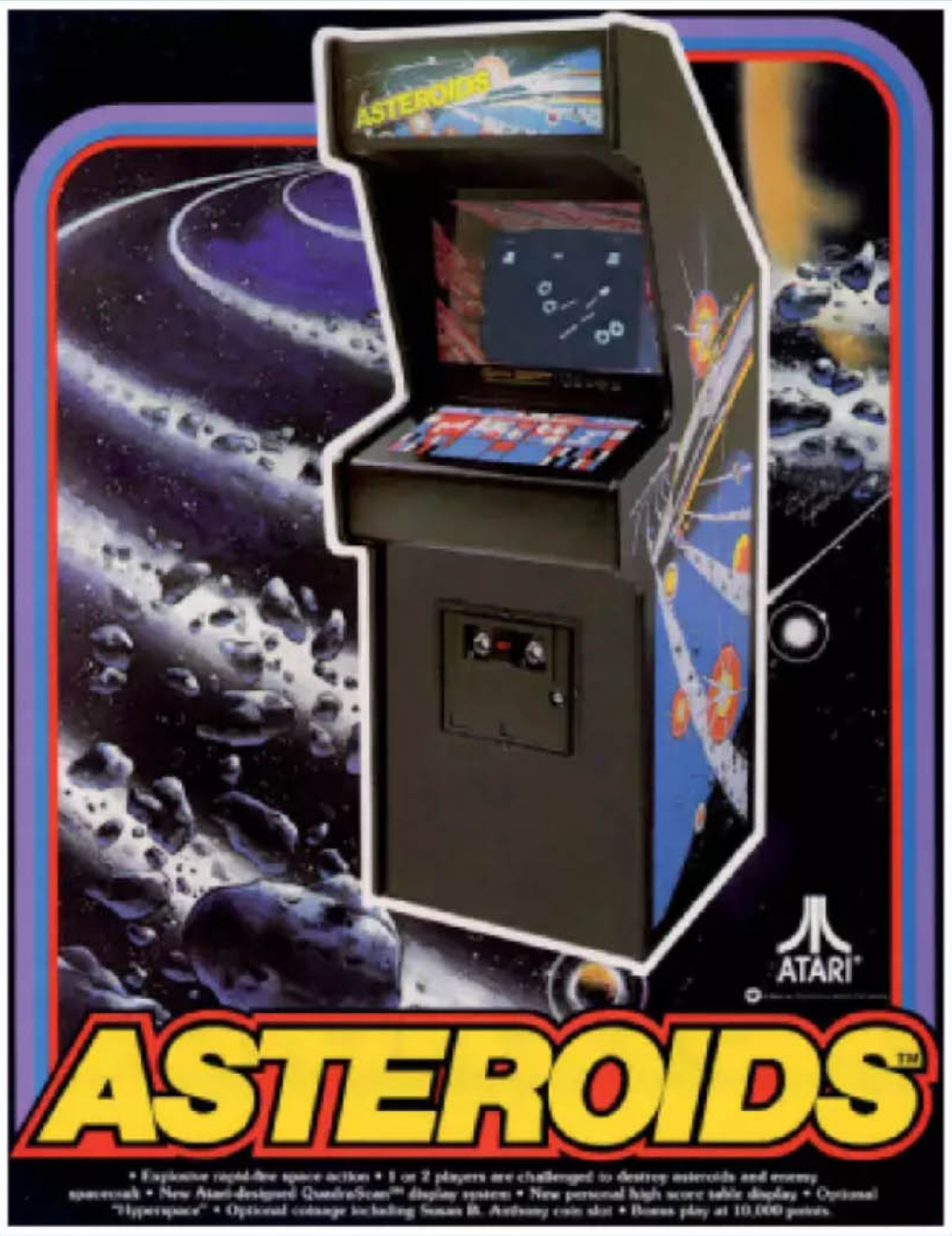
The Camp Experience That Lasts a Lifetime.
ATARI COMPUTER CAMPS

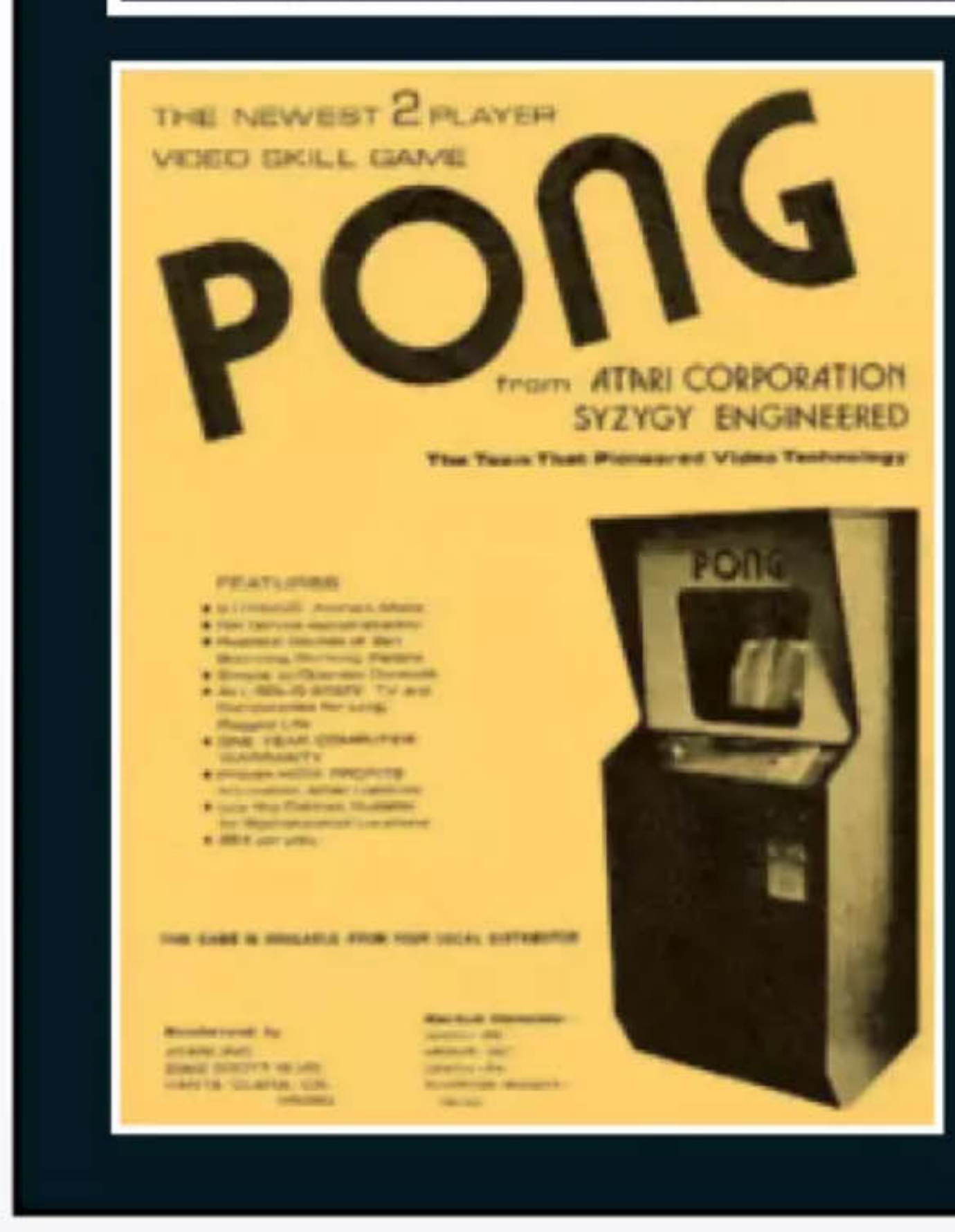


72 Atari Inc

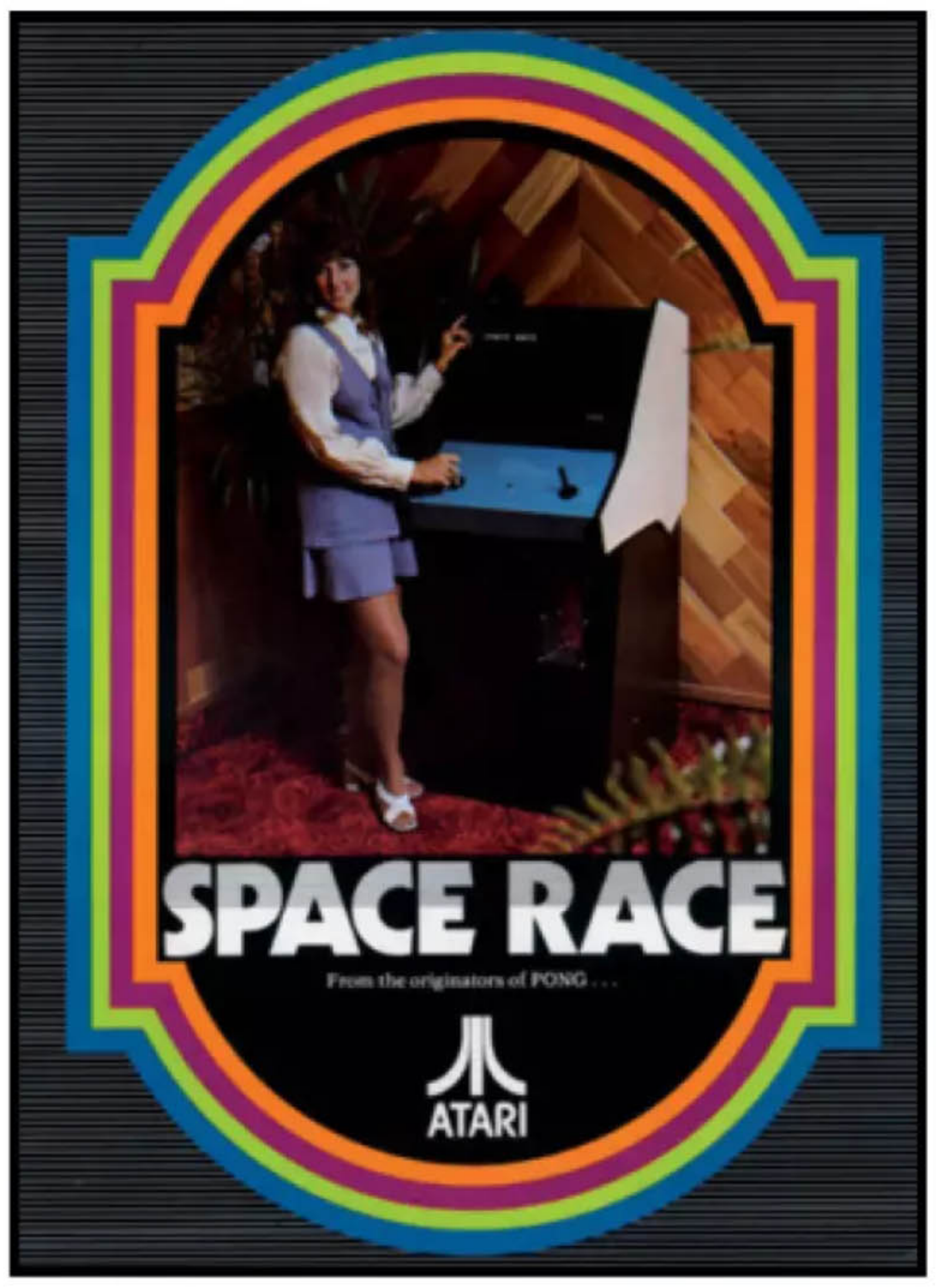
> "WAS I SUBVERSIVE? OH NO, I WAS DOING IT FOR THE LOVE OF GAMES, MAN..."
>
> ED LOGG

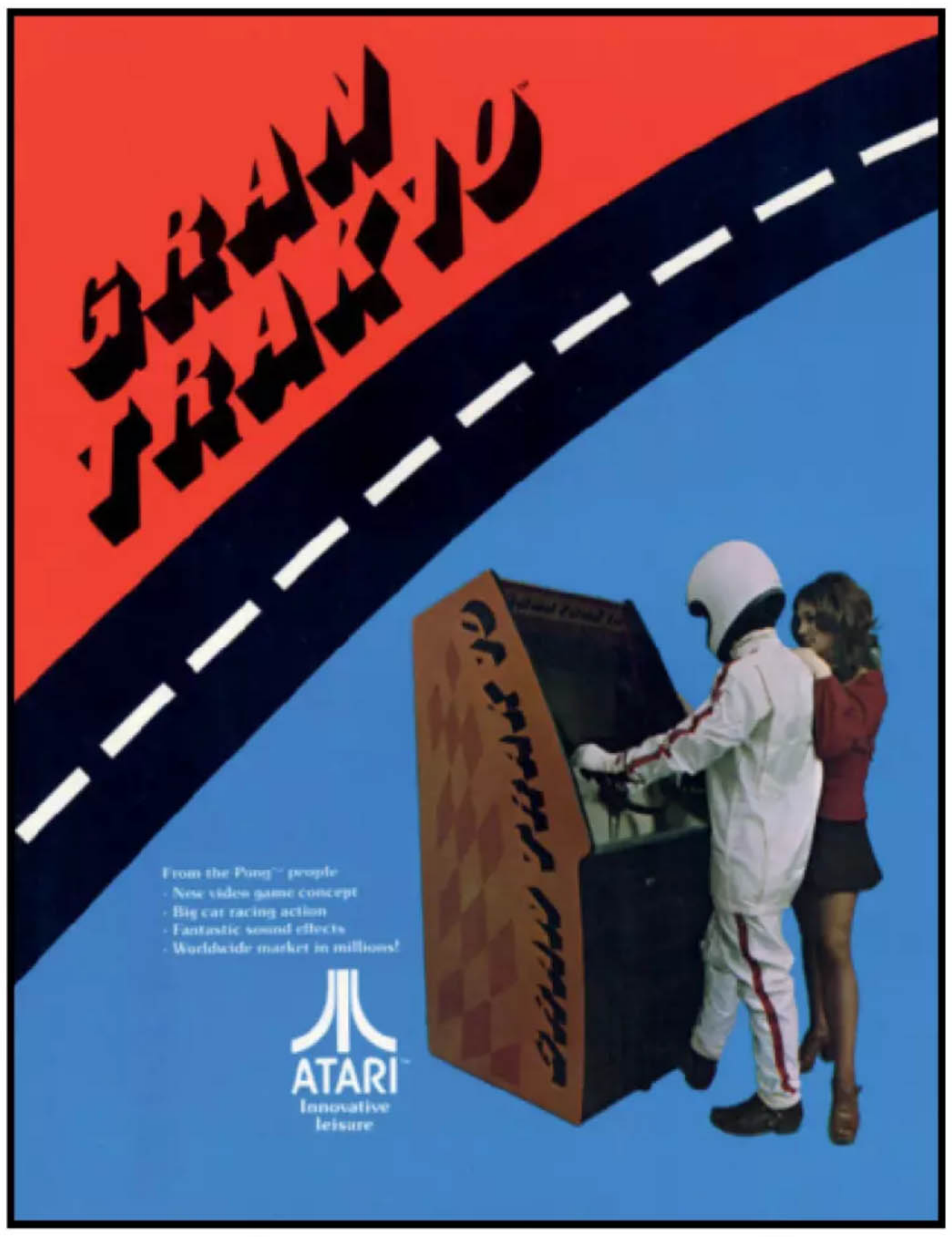
84 Nolan Bushnell

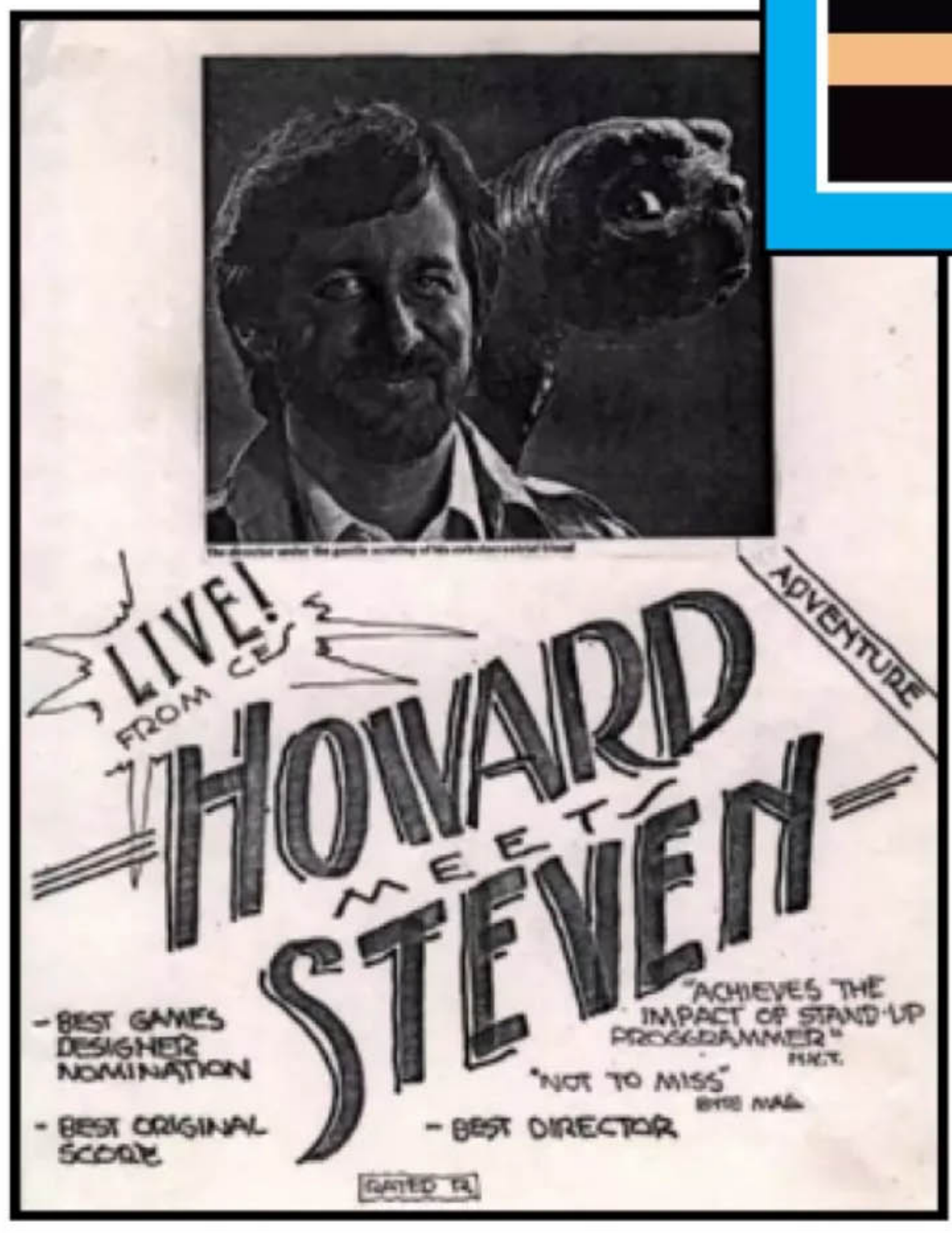

ATARI
ASTEROIDS™
• Explosive rapid-fire space action • 1 or 2 players are challenged to destroy asteroids and enemy spacecraft • New Atari-designed QuadraScan™ display system • New personal high score table display • Optional "Hyperspace" • Optional cottage including Susan B. Anthony coin slot • Bonus play at 10,000 points.


THE NEWEST 2 PLAYER
VIDEO SKILL GAME
PONG
from ATARI CORPORATION
SYZYGY ENGINEERED
The Team That Pioneered Video Technology
FEATURES
PONG

88 Ed Logg


SPACE RACE
From the originators of PONG . . .
ATARI


GRAN TRAK 10
From the Pong™ people
- New video game concept
- Big car racing action
- Fantastic sound effects
- Worldwide market in millions!
ATARI
Innovative leisure


LIVE! FROM CES
HOWARD MEETS STEVEN
ADVENTURE
- BEST GAMES DESIGNER NOMINATION
- BEST ORIGINAL SCORE
"ACHIEVES THE IMPACT OF STAND-UP PROGRAMMER" HACT.
"NOT TO MISS" BYTE MAG.
- BEST DIRECTOR

E.T.
©1982 ATARI

94 Howard Scott Warshaw

98 David Crane

MPH
Foot Locker

0:08.07
ACTIVISION 1

ATARI FOOTBALL
DOWN TO GO
3 14
INSERT COINS
TIME 0 00
SCORE 0 0
WARLORDS
STAR WARS
SCORE
6,066
SHIE
CLOAK & DAGGER
WAVE
YOUR MISSI
RECOVER THE
THE EVIL DR
STOP THIEF!

ATARI INC

FORMED BY TWO ENGINEERS, ATARI ROSE TO DEFINE THE EARLY GAMES INDUSTRY. HOWEVER, ITS RAPID EXPANSION HID THE LOOMING THREAT OF BANKRUPTCY THAT DEFINED ITS EARLY DAYS, RIGHT THROUGH TO THE CORPORATE OVERINDULGENCE AND PERSONALITY CLASHES THAT OVERSAW ITS ULTIMATE DOWNFALL

INSTANT EXPERT

- Atari Inc was founded on 28 June 1972 but technically began in 1969 as a partnership between Nolan Bushnell and Ted Dabney called Syzygy Engineering.
- Atari's first arcade game was *Pong* in 1972. Its first consumer product was a home version of *Pong* for Sears in 1975.
- The Video Computer System (VCS), better known as the Atari 2600, began its life in August of 1975 and was released on 14 October 1977.
- Warner Communications bought Atari in 1976 for an estimated $32 million. It gave away half of it in 1984 for no money – just promissory stock.
- Atari's top game properties are *Pong*, *Breakout*, *Asteroids*, *Centipede*, *Battlezone*, *Missile Command* and *Tempest*.
- Atari Inc affected the popular culture of the early Eighties to such a degree that it became synonymous with the use of high technology. It even affected US politics, as the term 'Atari Democrat' was actually created to describe Democrats who supported the development of high-tech industries to stimulate the US economy of the time.

Atari's origins go back to Ampex and a little-remembered division called Videofile. A document storage and retrieval system that used videotape and television displays to search for and reproduce documents, it was capable of recalling a full page out of the phone book and printing it accurately. An analogue engineer by the name of Ted Dabney had been working in the 'Input/Output' group at Videofile, responsible for the cameras and printers used to record and later print out documents, when he found himself with a new office mate. Just out of college, the young Nolan Bushnell had moved out to California from Utah after getting an entry-level job at Ampex.

Skill and personality-wise the two couldn't have been more different from each other. According to their boss, Ed DeBenedeti: "Nolan was the dreamer and Ted was the plodder. Ted's engineering work and ideas were conservative perhaps in the extreme. Nolan and later interns Al [Alcorn] and Steve [Bristow] were brilliant, inexperienced enough that they had no idea of what one could not do."

In a sense, Ted's experienced approach to engineering would serve well to give Nolan's inexperience and forward-looking manner a solid foundation as the two embarked on a side project together. Already enjoying daily games of Go in the office on Ted's custom-built board, Nolan had talked about wanting to pursue bringing computer games to the arcade environment. Tapping the more experienced Ted, he began partnering with him on trying to make the dream a reality. According to Ted: "He took me off to Stanford to see [Spacewar!] so I could help him come up with ways to do such a thing."

The original plan was to bring the experience direct to the arcade via a PDP or comparable minicomputer, and a third partner with programming experience, Larry Bryan, was brought in to that end. It turned out to be a short partnership, however, when this approach was quickly found to be cost prohibitive, but they did get a name for their engineering group out of it – Syzygy Engineering. If this plan for an electronic arcade game worked out, the two planned to have Syzygy be a contract-engineering firm for the arcade industry.

When it was decided to move to a non-general purpose format – or 'state machine', where the game is comprised of zero code but rather hardwired through chip logic – it became Ted's turn to do the heavy lifting. He designed all the circuitry to put a spot on a modified television screen and move it around, and Nolan shopped it around for someone who may be interested in funding the development of a final product, as well as manufacturing and distribution. Finding closed doors everywhere he looked, and little interest in the arcade industry mecca of Chicago, he finally found a coin-op company locally that was interested. Nutting Associates had previous successes with electro-mechanical games such as *Computer Quiz* and saw the potential of this

N: STOLEN PLANS
. BOOM AND DES
HEH, HEH, HEH...
MISSILE COMMAND

new format. Hiring Nolan as lead engineer to finish adapting Ted's work into a game while performing other duties at the company, Nutting became the future of the industry for a short time.

Having talked Ted into leaving Ampex and joining him at Nutting, by the end of development Nolan was itching to have more input on the business side of things. The two left Nutting by the spring of 1972 and decided to make Syzygy Engineering their main source of income. Funding the startup with money from Nutting's purchase of their game *Computer Space*, and subsidising daily operations with a coin route, Nolan looked to get their first contract. Their first client was Bally, which contracted them to produce pinball playfields and, more importantly, an electronic driving game. Nolan hired former Ampex intern Al Alcorn to work on the proposed game, and allowed him to get acclimated to their video circuitry from *Computer Space*. Nolan had seen a demonstration of the first videogame console, the Magnavox Odyssey, that past May, and decided to have Al do an arcade version of its tennis game. By the time Al was done in August of 1972, Nolan was outvoted two to one to make Al's warm-up game, *Pong*, Syzygy's actual game for Bally.

It was during this time that Atari received its by now-legendary name. The name that would continue long after the original company disappeared. When looking to formally incorporate Syzygy Engineering, it was found that several other companies at the time were already using the name. Giving the clerk a list of names based on moves from Go, the clerk picked Atari, not knowing that he would be choosing the name of the company that would define electronic entertainment for years to come. On 27 June 1972, Atari Inc was officially born. Nolan and Ted decided to keep the Syzygy name for the engineering portion of their venture, and use Atari for their outward-facing business activities.

A surprise hit

After putting several test cabinets of *Pong* out into the wild – most notably one at Andy Capp's Tavern that sat right next to a *Computer Space* unit – a funny thing happened. *Pong* was a big success, drawing in far more money than the *Computer Space* machines were, to the extent that the Atari staff were afraid that when they reported back to Bally on how the test run was doing for the machine, Bally wouldn't believe them. Wary of this, they under-reported the earnings numbers, and Bally still thought they were exaggerating.

With Bally stalling on accepting the game and looking to possibly pass it off to its subsidiary, Midway Manufacturing, and Atari knowing how well the game was actually doing, Nolan, Ted and Al had a very important decision to make: either let *Pong* sit in limbo to maybe be rejected altogether, or look to go into manufacturing for themselves. They chose the latter, and Ted concocted a plan that Nolan send a carefully crafted letter to Bally, suggesting that it officially reject *Pong* so that Atari could develop a new game for it. The letter worked, and Atari became a full design and manufacturing arcade company.

New horizons

From there the growth was explosive, with Nolan and Ted hiring people off the streets to fill the manufacturing needs, and Nolan hiring more engineers and management to help with the growth. Tension began to develop between Nolan and Ted on how the company

> "HE DEFINITELY HAD NO IDEAS ABOUT TV GAMES OF ANY SORT"
>
> TED DABNEY

BY THE NUMBERS

$40 million The amount of profit generated by Atari as its golden age began in 1977, the year it released the hugely successful Atari 2600.

$539 million The amount it lost in 1983, as the industry's crash was under way.

2 The number of competitors Atari had in video arcade games in 1972.

25 The number of competitors by 1974.

$98.95 The cost of Atari's first home console, Pong, in 1975.

$189 The cost of the Atari 2600 at launch.

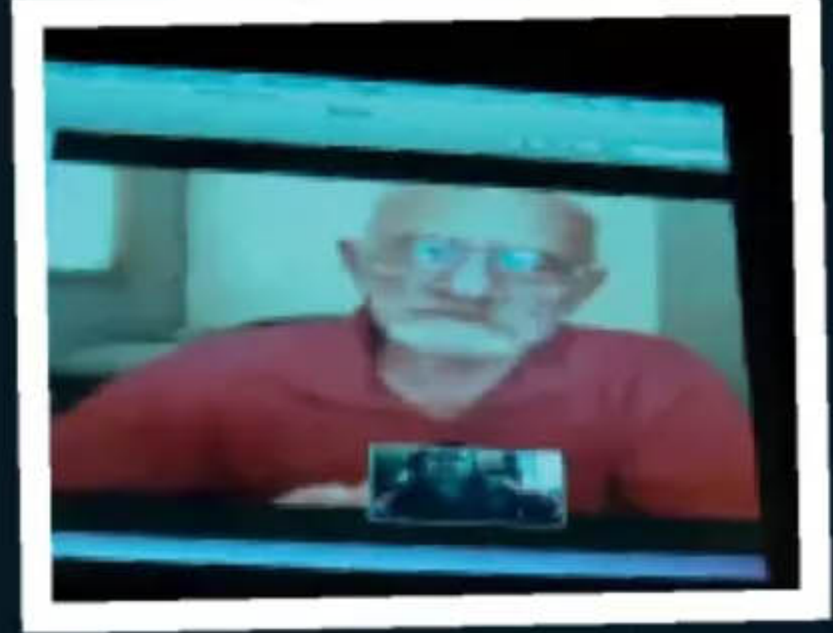
1 The number of manufacturers making games for the Atari 2600 at its 1977 release. Of course, it was just Atari itself, although third-parties would quickly appear.

145 The number of manufacturers making games for the 2600 worldwide at the time of the crash.

5,000 The number of shares allegedly sold by Ray Kassar based on exclusive insider knowledge of Atari's performance.

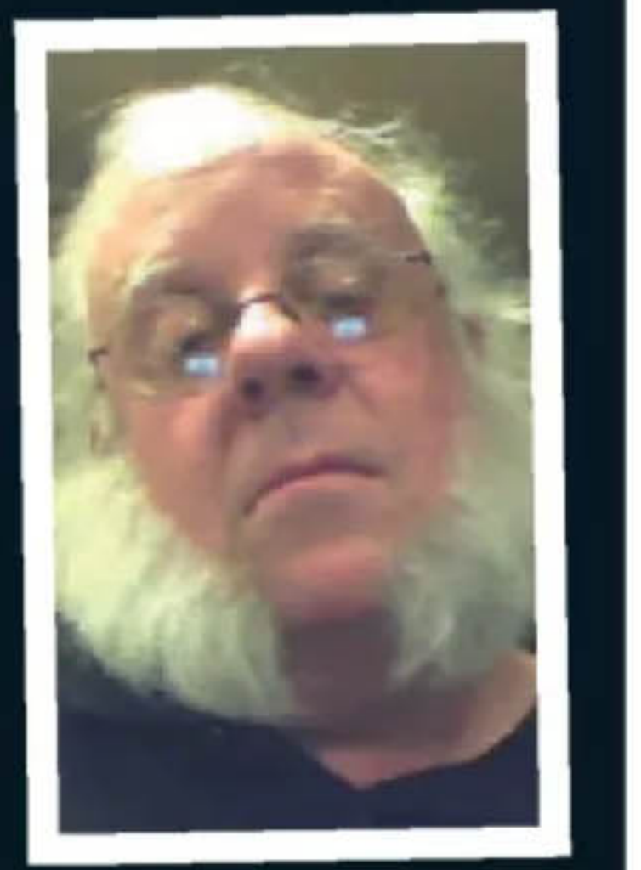
WHERE ARE THEY NOW?

Nolan Bushnell
After leaving Atari, Nolan headed his Chuck E Cheese Pizza Time Theatre until facing bankruptcy. Funding several start-ups under Catalyst Technologies in the Eighties and briefly returning to video arcade games under Sente, he ran a string of entertainment companies including PlayNet and uWink, which eventually closed due to poor market performance. He is currently partnered in Anti-Aging Games and is an advisor to the current owner of the Atari brand, Atari SA (formerly Infogrames).



Ted Dabney
After leaving Atari Inc in 1973, Ted worked for arcade company Meadows for a time as well as several other non-arcade engineering jobs. He even briefly worked for his ex-partner again when he created the pizza number callout system for the early Chuck E Cheese, as well as the Chuck E Cheese-branded ***Isaac Asimov** Presents Super Quiz* arcade game in the late Seventies. He's currently enjoying retirement while reacting to the recent interest in his involvement in early videogame history with surprise, wonder and gracious interviews.

Al Alcorn
After leaving Atari Inc in 1983, he became an Apple Fellow in 1986 before moving through a string of engineering management positions at various entertainment companies in the Nineties and early 2000s. He's currently VP of engineering at uGetit, a mobile social gaming firm that combines gaming with 'social shopping'. Former Atari employee Roger Hector also joins him there.

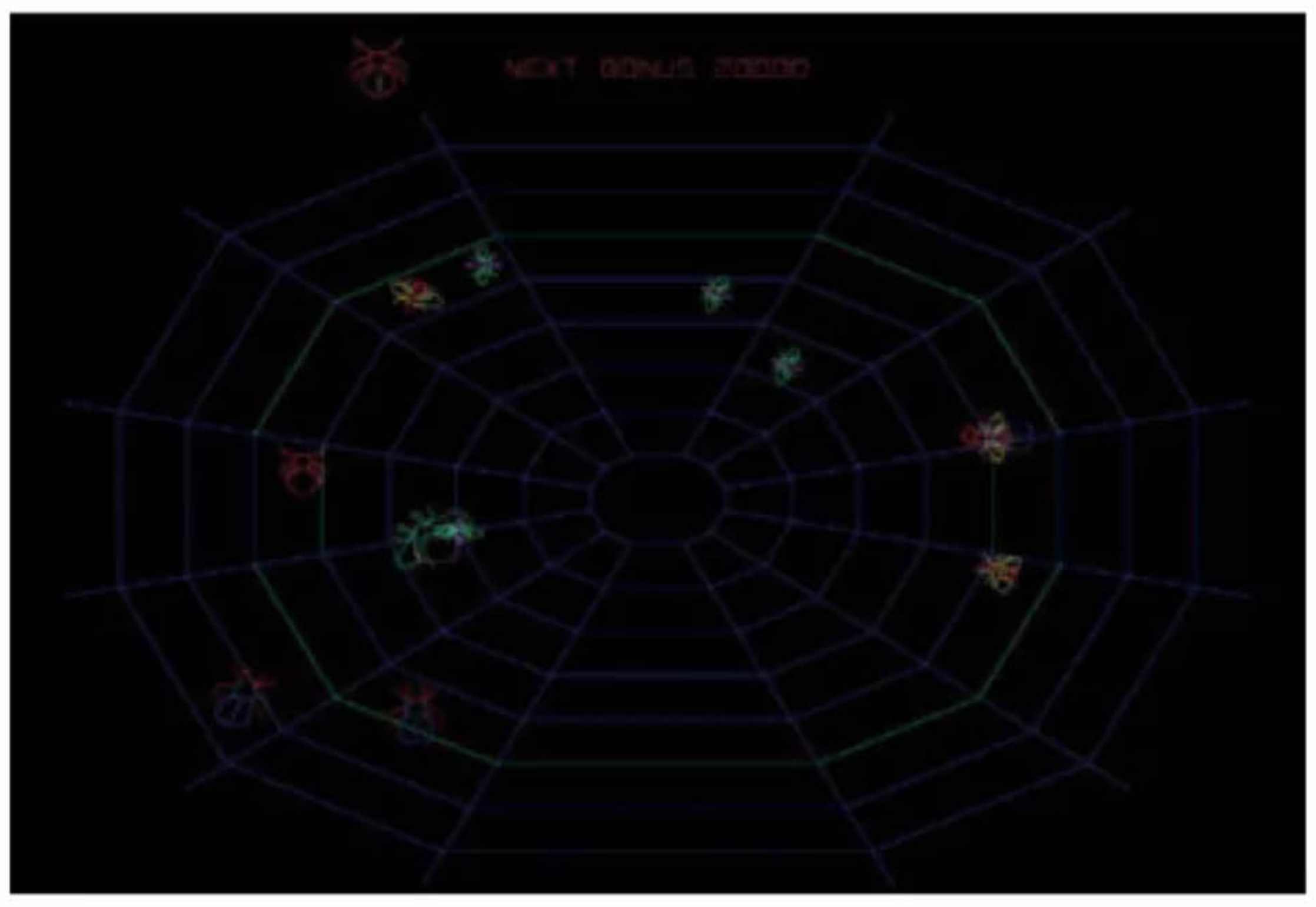


Steve Bristow
Steve decided that he would move on and left Atari back in 1984 after more than a decade fn service there. Since that timeSteve has worked as an engineer at various communications firms. He's currently employed at headset manufacturer Plantronics.

> "NOLAN HAD FIGURED THAT PEOPLE WOULD SPEND MORE MONEY ON WHAT THEY WANTED, NOT WHAT THEY NEEDED"
> AL ALCORN

TIMELINE

1969	SYZYGY PARTNERSHIP FORMED
1971	*COMPUTER SPACE* RELEASED BY NUTTING ASSOCIATES
1972	ATARI INC FORMED. BOARD OF DIRECTORS ARE NOLAN K BUSHNELL, S FRED DABNEY (TED DABNEY), AND THEIR WIVES PAULA N BUSHNELL AND JOAN M DABNEY
1972	THE FIRST TEN PRODUCTION *PONG* UNITS SHIP
1973	TED DABNEY FORCED TO QUIT, BUT REMAINS ON THE BOARD. ATARI BEGINS RELATIONSHIP WITH CYAN ENGINEERING
1973	KEE GAMES IS FORMED AS A 'COMPETITOR'. WHILE HAVING SEPARATE MANAGEMENT AND ENGINEERS, THEY SHARE THE SAME ASSEMBLY LINE
1974	*GRAN TRAK 10* RELEASED. LAYOFFS ENSUE
1974	KEE GAMES RELEASES THE BLOCKBUSTER *TANK*



should be running, however, and Nolan decided that there wasn't room for two heads – a fact that became obvious to Ted when Nolan hired someone to come in and help restructure the business and employee roles. When they asked Ted what he did at Atari, he knew his time was up; he was forced out of the company, with management firmly in Nolan's hands, as Atari began its 'Innovative Leisure' period.

By continuing to pump out new games based on sports themes while doing engineering research for an eventual move into the consumer market, Nolan looked to stay ahead of the game. As Al Alcorn relates: "Nolan didn't want to define us as the best coin-op game designer and manufacturer; instead he focused broadly on the entertainment business. We were creating new, disruptive products in the leisure industry. Nolan figured people would spend more money on what they wanted, not what they needed." But things soon took their toll on the fledgling company.

Nolan had made some bad hiring decisions for the financial management portion of the company, and it soon needed to lay off employees. To make matters worse, it started facing intense competition from others entering the videogame market, including old industry hands like Bally and Chicago Coin, and new companies like Allied Leisure. Already competing for a spot at the well-established coin-op distribution table, Nolan came up with the idea to create a 'competitor' to increase the cash flow of the company. It would have its own building, exhibit on its own at the industry shows, and have its own purchasing, sales and engineering group, which would include another former Ampex intern, Steve Bristow, but all its manufacturing would be done on the Atari assembly line. This company, Kee Games, could clone Atari titles, allowing the company to sell them 'exclusively' to two distributors at once.

The wheels come off

Financial disaster struck in the form of *Gran Trak 10*. The game was so badly engineered that they started coming back to Atari in droves, forcing Al Alcorn to come out of his sabbatical and redesign them, and forcing an even more lengthy delay to this already costly game.

Then, on top of that, an accounting error set the selling price of each unit to $995, when it cost $1,095 to manufacture it in the first place. It resulted in pushing Atari even further towards bankruptcy, and the company ended up losing half a million dollars between 1973 and 1974. By the end of 1974, Atari began to fully merge Kee into its parent and offloaded its Japanese operation to Nakamura Manufacturing Co, (now Namco).

Things started looking a bit better in 1975 as Kee's management entrenched itself at Atari. Kee president and Nolan's next door neighbour Joe Keenan became president of Atari; Gill Williams became VP of manufacturing, helping to smooth out issues there; and Kee's lead engineer, Steve Bristow, became VP of engineering. Along with Steve came top engineering talent and future stars like Lyle Rains, who, together with Steve, had created the blockbuster *Tank* at Kee. Several arcade classics would be released in 1975 that would go on to become more known for their Atari 2600 versions but served the ultimate goal of helping Atari get back on track: *Anti-Aircraft*, *Jet Fighter*, and the multiplayer *Indy 800* were just a few of the games that were released. The biggest development, though, was the fulfilment of Nolan's wish for Atari to enter the consumer arena.

Homecoming

Al Alcorn and several engineers had been working on bringing *Pong* to homes. The move to the consumer market meant shrinking the large logic-based arcade board to a small integrated circuit, for which a partnership with chip manufacturer Synertek and its IC designer Jay Miner was formed. The end result was a product that put Atari on the map in the consumer market when it released through Sears in time for Christmas 1975. The research and development firm Cyan was also busy during Pong's home release, working on a microprocessor-based home console that had the potential to more than make up for the *Gran Trak 10* fiasco.

Still realising that it wasn't enough to completely save the company and expand operations like he wanted to, Nolan began looking for more investors in Atari, and eventually, an actual buyer. As 1976 began, the buyer appeared in the form of Warner Communications. Warner had been on a buying spree to expand its operations, and the acquisition of an expanding videogame firm like Atari fit nicely into its plans. The deal was signed in October 1976, officially making Atari a Warner subsidiary.

Under Warner, development of Atari's consumer line began to blossom, the most prolific aspect of which was Cyan's microprocessor-based game console. First

1975 ATARI'S FIRST HOME CONSOLE, THE SEARS TELE-GAMES-BRANDED HOME *PONG*, IS RELEASED. ATARI SETS UP A PINBALL DIVISION

1976 ATARI IS BOUGHT BY WARNER COMMUNICATIONS FOR ABOUT $28 MILLION, IN ADDITION TO THE FUNDING OF NOLAN'S VIDEOGAME/PIZZA PARLOUR IDEA, WHICH BECAME CHUCK E CHEESE. THE ARCADE GAME *NIGHT DRIVER* IS RELEASED

1977 THE VIDEO COMPUTER SYSTEM (ATARI 2600) IS RELEASED

1978 NOLAN BUSHNELL FORCED TO QUIT ATARI. TAKES CHUCK E CHEESE WITH HIM AND IS REPLACED BY RAY KASSAR

1979 ATARI INTRODUCES ITS FIRST COMPUTERS, THE 400 AND 800, WHICH SHIP IN NOVEMBER AT THE SAME TIME *ASTEROIDS* IS RELEASED IN ARCADES. ATARI BEGINS ASKING RETAILERS TO BEGIN SELLING HOME VIDEOGAMES ALL YEAR ROUND

1980 *SPACE INVADERS* IS RELEASED FOR THE 2600, THE SYSTEM'S FIRST MUST-HAVE GAME. LATER THAT YEAR ATARI RELEASES *MISSILE COMMAND* AND *BATTLEZONE* IN THE ARCADES

1982 ATARI RELEASES THE ATARI 5200 AS WELL AS THE MUCH-MALIGNED *PAC-MAN* AND *E.T.* FOR THE 2600. ATARI HITS RECORD SALES OF $2 BILLION, BUT ALSO BEGINS ITS DECLINE

1983 RAY KASSAR RESIGNS, AND IS REPLACED BY JIM MORGAN IN SEPTEMBER

1984 ATARI INC IS SPLIT UP BY WARNER COMMUNICATIONS. ATARI'S CONSUMER DIVISION GOES TO JACK TRAMIEL, WHICH HE ROLLS INTO TRAMIEL TECHNOLOGY LTD AND RENAMES ATARI CORPORATION. WARNER MAINTAINS THE ARCADE DIVISION AND RENAMES IT ATARI GAMES CORPORATION

codenamed Stella and then officially named the Video Computer System (CX-2600), it was released in 1977 and proved to be the path to true greatness for the company when it became an icon of the videogame industry in the early Eighties. It sold well that first season in 1977 but proved financially harmful to Atari the following year when manufacturing delays caused a shortage of the console for the 1978 Christmas season. As in the arcade industry years before, Atari was soon joined by competitors eating up the new console market – Bally with its Professional Arcade, Magnavox and Philips with the Odyssey2, RCA with the Studio II, and programmable console pioneer Fairchild with its Channel F a year before Atari's console. Atari needed something to separate the VCS from the pack.

Also contributing to Atari's familiar financial problems for 1978 were a lacklustre arcade line-up of forgettable games, such as *Sky Raider*, *Ultra Tank* and *Smokey Joe*. To make matters worse, there was tension between Nolan and Warner Communications. Nolan had been accused of being a lax CEO since the purchase, almost "checking out" of the much-needed daily running of the company, and by his own admission that was the case. Consequently, it left more room for Warner and its installed executives to flex their muscles, such as Raymond Kassar, the head of the consumer division. It didn't help matters that Nolan began butting heads with Warner on issues like the future of the pinball division, or even the future of the VCS.

By the autumn of 1978, Nolan had crossed the line by trying to hold meetings in secret without Warner staff knowing about them. Warner put Nolan out to pasture after a reorganisation plan and, like Ted years before, he was left with no recourse but to quit that December. Ray Kassar was now left in charge and began heading what many consider the golden age of the company, if not the entire Atari brand. Not without a little speed bump to start out with, though.

Under new management

Shortly after coming to the company, Ray had begun bumping heads with some of the Video Computer System programmers, calling them "high-strung prima donnas" in an off-the-record portion of an interview with the San Jose Mercury News that ended up getting published. A meeting designed to be a pep talk in early 1979 proved to be the last straw for some, as he managed to alienate even more.

"HE FOCUSED BROADLY ON ENTERTAINMENT"
AL ALCORN

VCS and Atari 400/800 engineer Joe Decuir related: "Ray called a meeting of the entire engineering team, coin-op and consumer – a bit of 'blah blah', and then he started talking about what we were going to do. He was excited about the [400 and 800] computer. He said we were going to sell them in designer colours so that women would buy them, and that we would also have home decorating software. A number of women I knew in engineering decided to resign because of this. One of the VCS programmers asked him how he was going to deal with the creative talent – the game designers. He said he knew about creative types from dealing with towel designers at Burlington Mills, his previous company. A core of programmers were disgusted, and formed Activision."

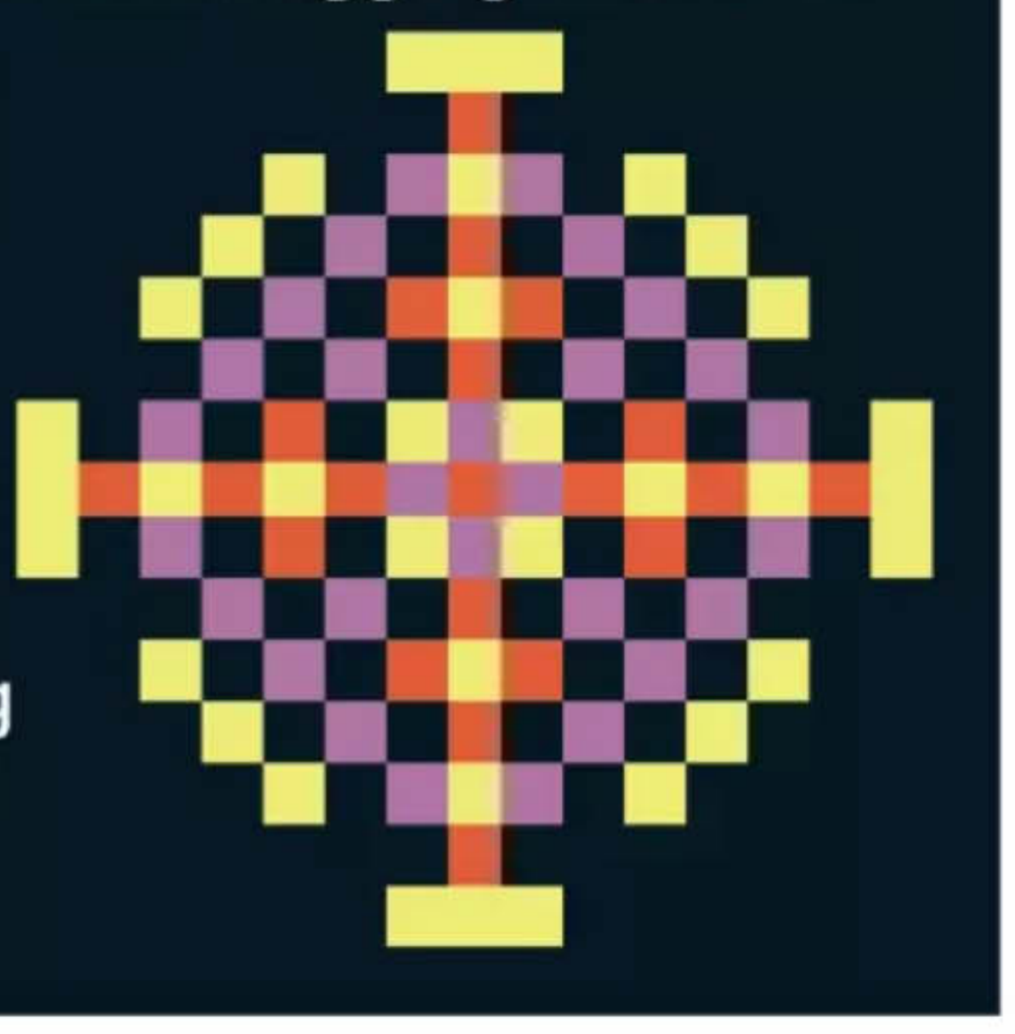
Fortunately, much of the coin-op talent stayed on to thrust Atari to the front just as the market began exploding thanks to the release of Taito's arcade smash *Space Invaders*. A string of now-iconic hits were released from 1979 onwards, including Ed Logg's *Asteroids*, the vector-based *Battlezone*, *Centipede* (another Logg project which he worked on with Dona Bailey) and more. The consumer division and its Video Computer System rode the wave in 1980 after a timely licensing of *Space Invaders* for the console came to fruition. Giving the lagging console its killer app, it was soon joined by an expanding third-party market thanks to Activision, and sales really took off.

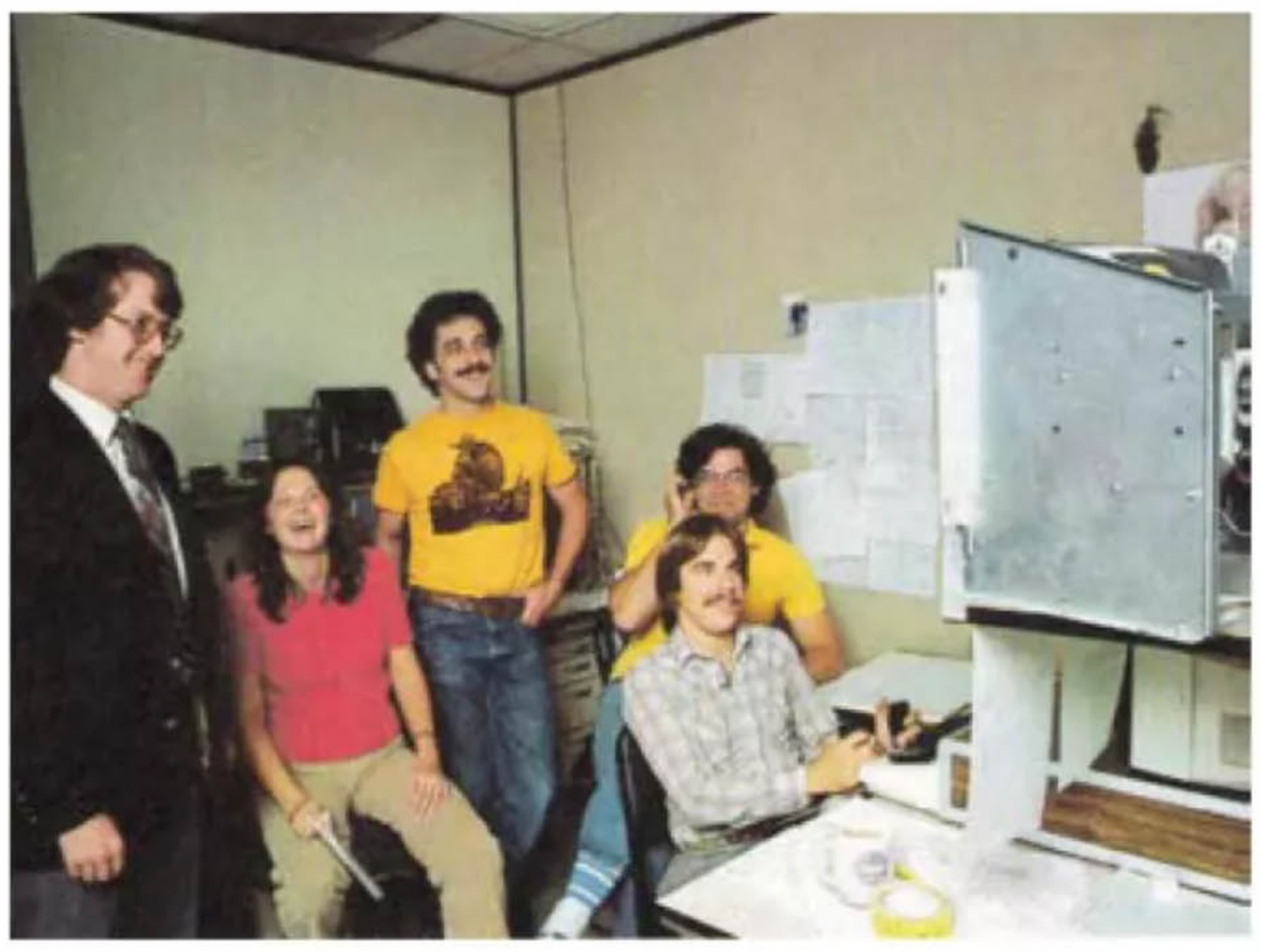
The catalyst for Atari's golden age was Warner Communications itself. As a powerhouse media company, it began leveraging its wide net of subsidiaries to add to Atari's public presence in the videogame craze of the early Eighties that it dominated. What many now take for granted or attribute to Nintendo during its Famicom/NES heyday was actually pioneered by Warner during this period. Atari-themed

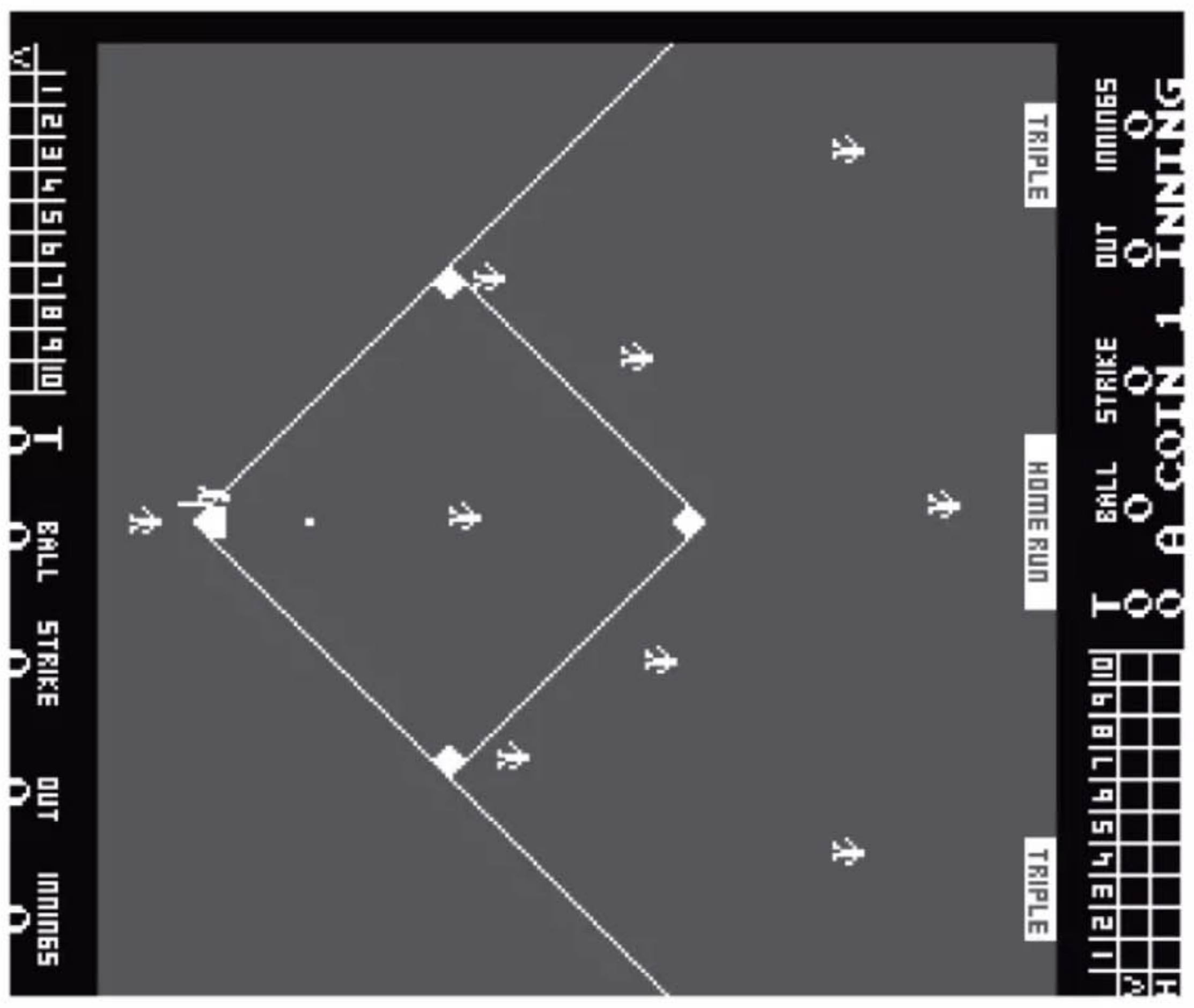
» Nolan Bushnell inspecting rows of *Pong* units ready to ship out in 1973.

HOLOGAMES

As the electronic toys craze hit in the late Seventies and early Eighties, Atari had a brief foray into its own handheld electronic devices and board games under its new electronic games division. Starting in 1978, Atari released *Touch Me*, a handheld game based on its own arcade game of the same name, which competed with and lost against a game from Milton Bradley inspired by *Touch Me*, *Simon*. Atari planned to follow up with handheld games based on arcade properties like *Breakout* and the licensed *Space Invaders*, and even planned advanced tabletop hologram-based products like the *Atari Cosmos* and *Atari Spector*. Alas, for Atari it was never to be. By the early Eighties, the electronic games market was lagging in the US and Atari shut down the division. Atari not only lost some advanced games in the process, but it lost the company's third employee, Al Alcorn, who had been heading the Cosmos project and quit shortly after.



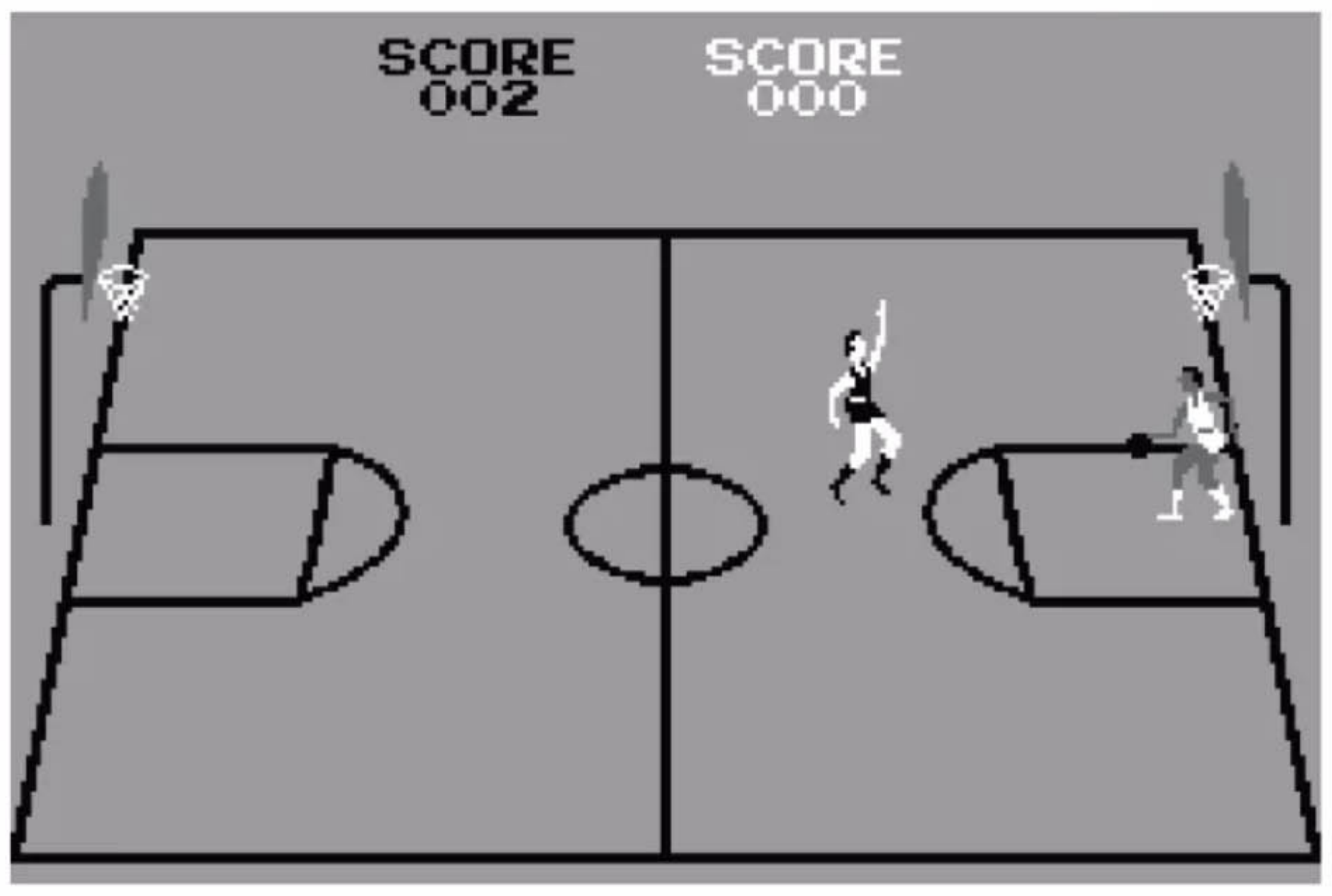

» Enjoying a round of *Battlezone* during its development are: (left to right) Lyle Rains, Dona Bailey, Ed Rotberg, Jeff Boscole and Owen Rubin (seated).



ATARI
5200
GET YOUR HANDS ON AN
ATARI

» Two shirts designed by Dan Kramer for internal use at Atari to celebrate the release of his Atari 5200 Trak-Ball.

» *Warlords* was an excellent multiplayer game that still remains very popular today with Atari fans.



magazines, movie placements, toys, clothing, party favours, costumes, jewellery, storybooks, big budget cinematic commercials, collectables and more built the brand into a commercial juggernaut.

> “INVESTORS BEGAN TO QUESTION THE VIABILITY OF THE INDUSTRY”
>
> THE CRASH BEGINS…

By 1982, Atari had become Warner Communications' golden goose. Comprising 80 per cent of the videogame industry, Atari was doing slightly over $2 billion in sales and producing more than half of Warner's $4 billion in revenues, and over 65 per cen of its profits. Warner saw only continued growth, and did what it could to force what should have been considered unmanageable growth, if not a bubble waiting to burst. This included frequent second-guessing of Atari management, creating a dual management. Money-losing deals such as the now-legendary *E.T.* tie-in were forced on Atari, and a string of ongoing projects that would have put the company far ahead in both consoles and computers were cancelled in favour of more incremental advancements like the Atari 5200 console and the XL series of computers. Not that some of Atari's management, such as Ray Kassar, weren't enjoying their perks; Learjets, limousines, yachts and luxury office remodelling were all on the menu.

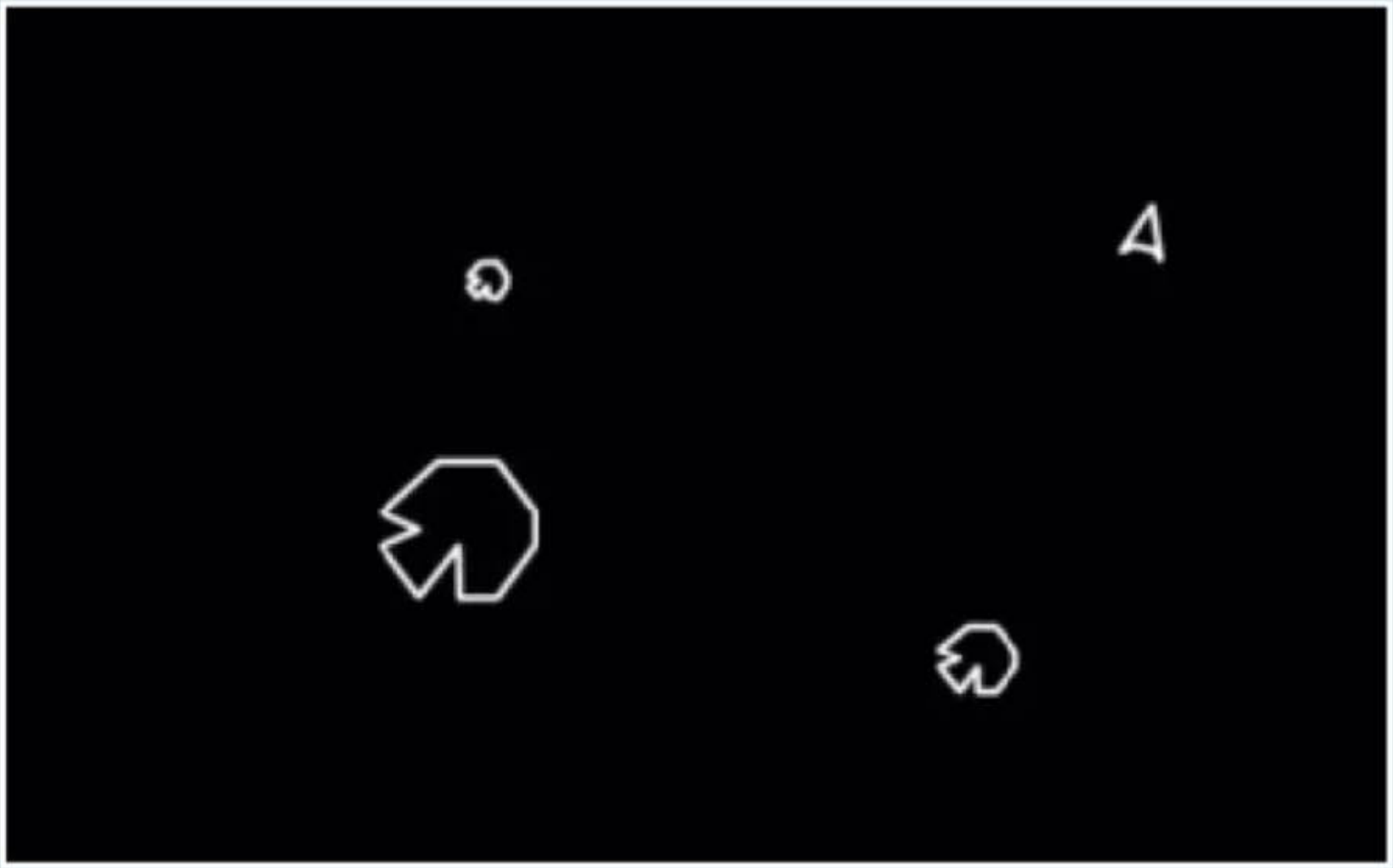
The signs of the end for the company were beginning as it enjoyed its record profits that year. By August of 1982, warehouses around the US began piling up with unsold inventory thanks to the glut of competing consoles on the market. As Gordon Crawford, a representative of the investment group that brokered the original sale of Atari to Warner related: “At the January '82 Consumer Electronics Show there were three or four new video hardware systems and about 50 new software systems – all the warning lights went on for me. Then, at the June CES, it was worse! There were about 200 software systems. This was a business where the year before it [was] essentially a monopoly, and now there were literally hundreds of new entrants.”

Warner and Atari management became partners in a cover-up of how Atari was starting to suffer. Producing artificial reports and a trumped-up projection of earnings for the final part of 1982, members in both management groups began selling off shares to insulate themselves. The most notorious example was Ray Kassar himself, who did so shortly before the December 1982 announcement that earnings were far short of the previously announced projection. It eventually led to him being forced from his position at Atari by that summer, but the damage was already done to the industry.

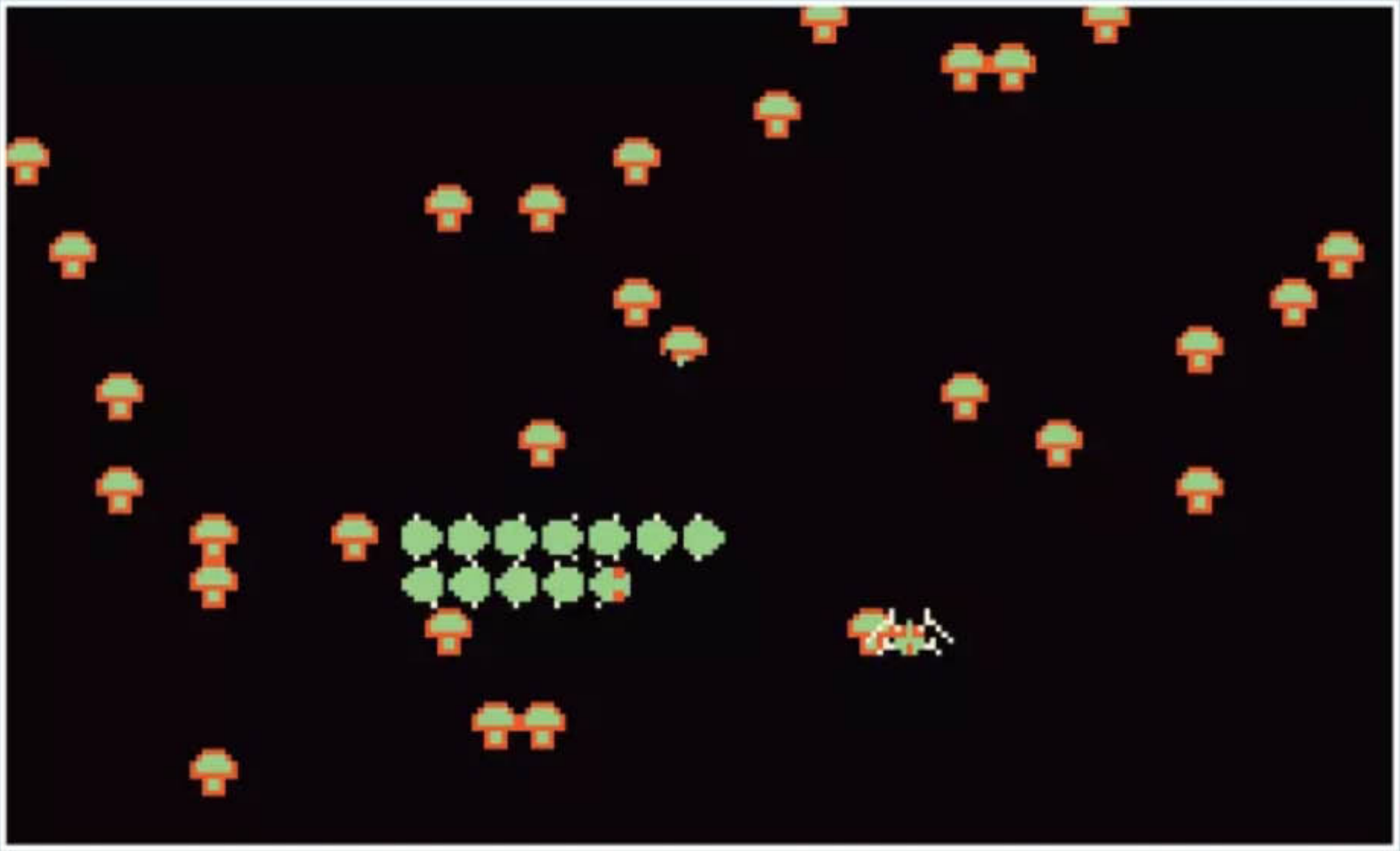
The bubble bursts

Shock waves spread as investors began to question the viability of the entire videogame industry, and stock prices plummeted. Layoffs began at Atari that January, and throughout the rest of 1983 and 1984 many of these new competitors that Crawford had witnessed

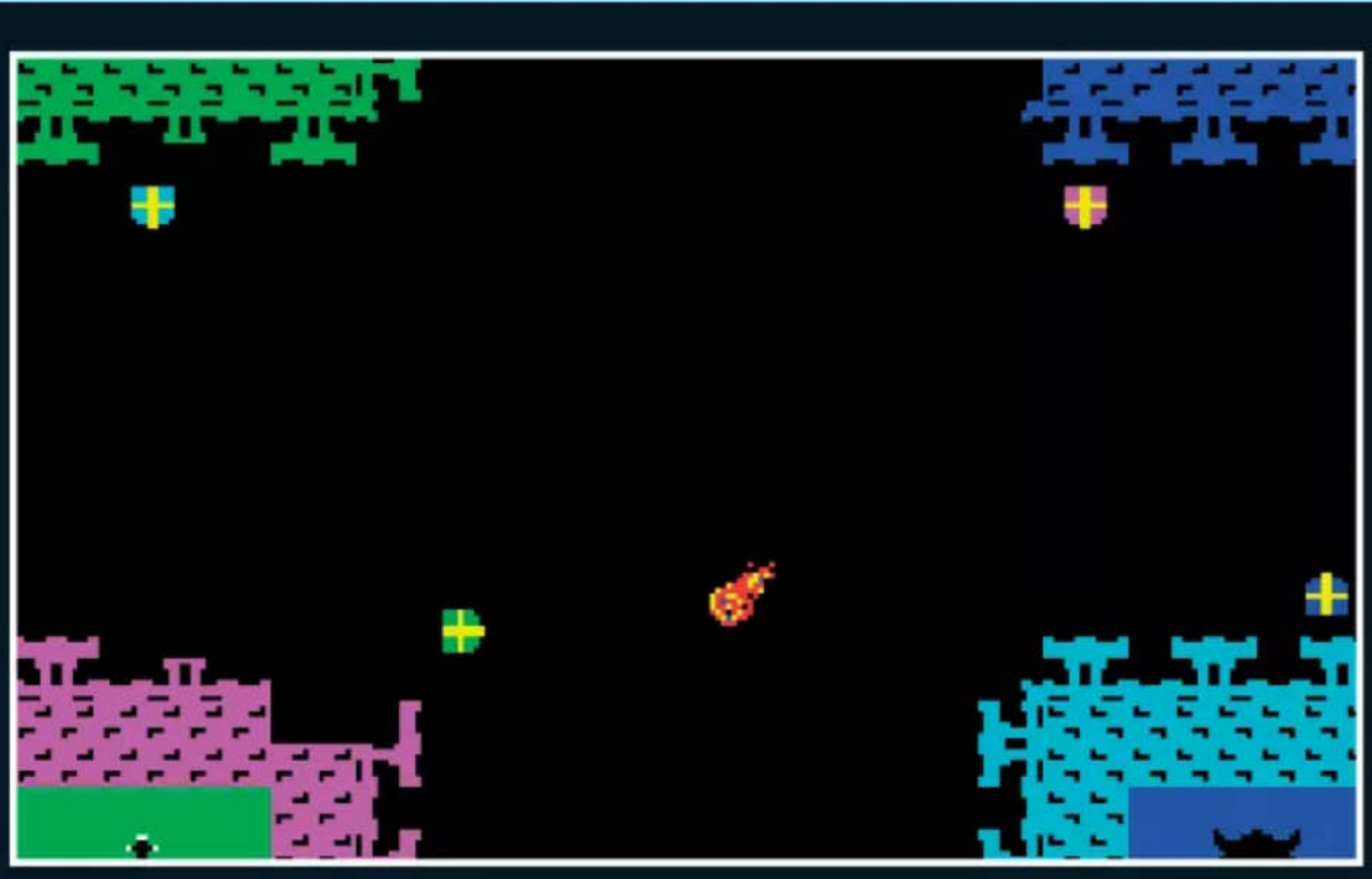
SIX OF THE BEST



Asteroids [1979]
The classic space shooter that influenced a generation, and it's still fun to play. While most will have to settle for playing this game on pixelated technology, nothing compares to playing in its original crisp vector monitor format.



Centipede [1980]
Another innovative game, *Centipede* improves on the bug theme initiated by *Galaxian*. Set in a dynamically changing garden playfield and complete with vibrant colour scheme, this top-down shooter proved a smash hit for Atari.



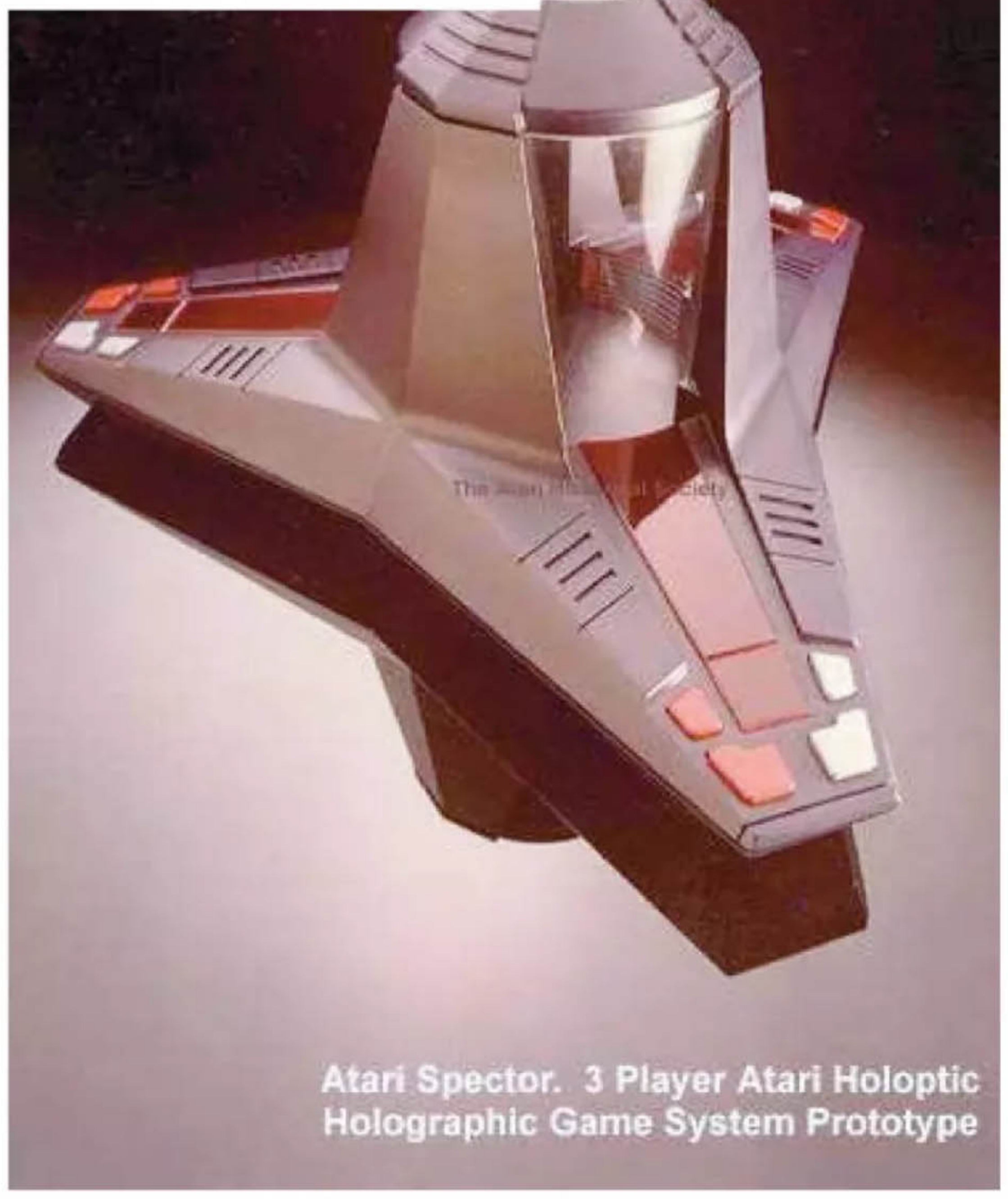
Warlords [1980]
Still one of the best multiplayer video arcade games of all time, its home port for the 2600 was just as fun and one of the only times you'll hook up four paddles. The arcade version includes a breathtaking 3D cut-out reflected backfield.

began closing. The videogame market crash had begun and it had begun in earnest.

Atari tried to minimise its losses by starting up advanced research divisions in computing and graphics, as well as expanding its areas of consumer reach in markets like next-generation medical devices and telephone research.

By September of 1983, Warner had decided to bring in James Morgan, VP of tobacco company Philip Morris, to replace Kassar and help turn the company around. However, Warner began mounting heavier and heavier earnings and stock losses as Atari lost millions by the day, and by winter of 1983 Warner itself was facing a hostile takeover by Australian publishing magnate Rupert Murdoch. In January of 1984, Warner brought in a firm to evaluate all its holdings and formulate a plan of action, and Atari was at the top of the list of subsidiaries that it was suggested to dump. The Murdoch takeover was averted that March after Warner decided to buy out his stock, but the writing was already on the wall for Atari by then. Warner began looking for any companies that would buy it outright, but when it couldn't, Atari was eventually split into pieces.

» The Atari Spector, a 'holoptic' tabletop game that never saw release.

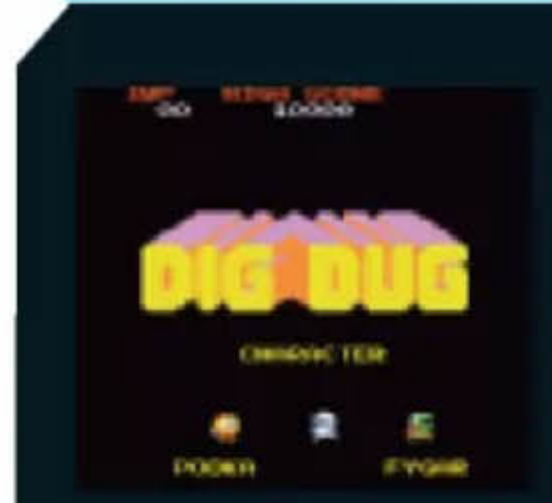

The Atari Historical Society
Atari Spector. 3 Player Atari Holoptic Holographic Game System Prototype

The consumer division and most of Atari's manufacturing and distribution capabilities were soon sold to Jack Tramiel in exchange for no money down and the taking on of most of Atari Inc's debt. Folding it into his Tramel Technologies Ltd (TTL), he renamed TTL to Atari Corporation and began a new chapter of the Atari brand in the consumer arena. The still-profitable coin division, responsible for Atari's arcade output, was initially kept and reformed as Atari Games, and soon after majority ownership was sold to Namco.

Much like a last-second swoop of the paddle in Pong to save you from your opponent scoring that winning point, the Atari brand was rescued from being completely wiped out in 1984 and would survive the crash. However, the drama, successes and failures were far from over…

Special thanks: Curt Vendel, Jerry Jessop, Ted Dabney, Steve Bristow, Owen Rubin, the Smithsonian.

THE NAMCO CONNECTION

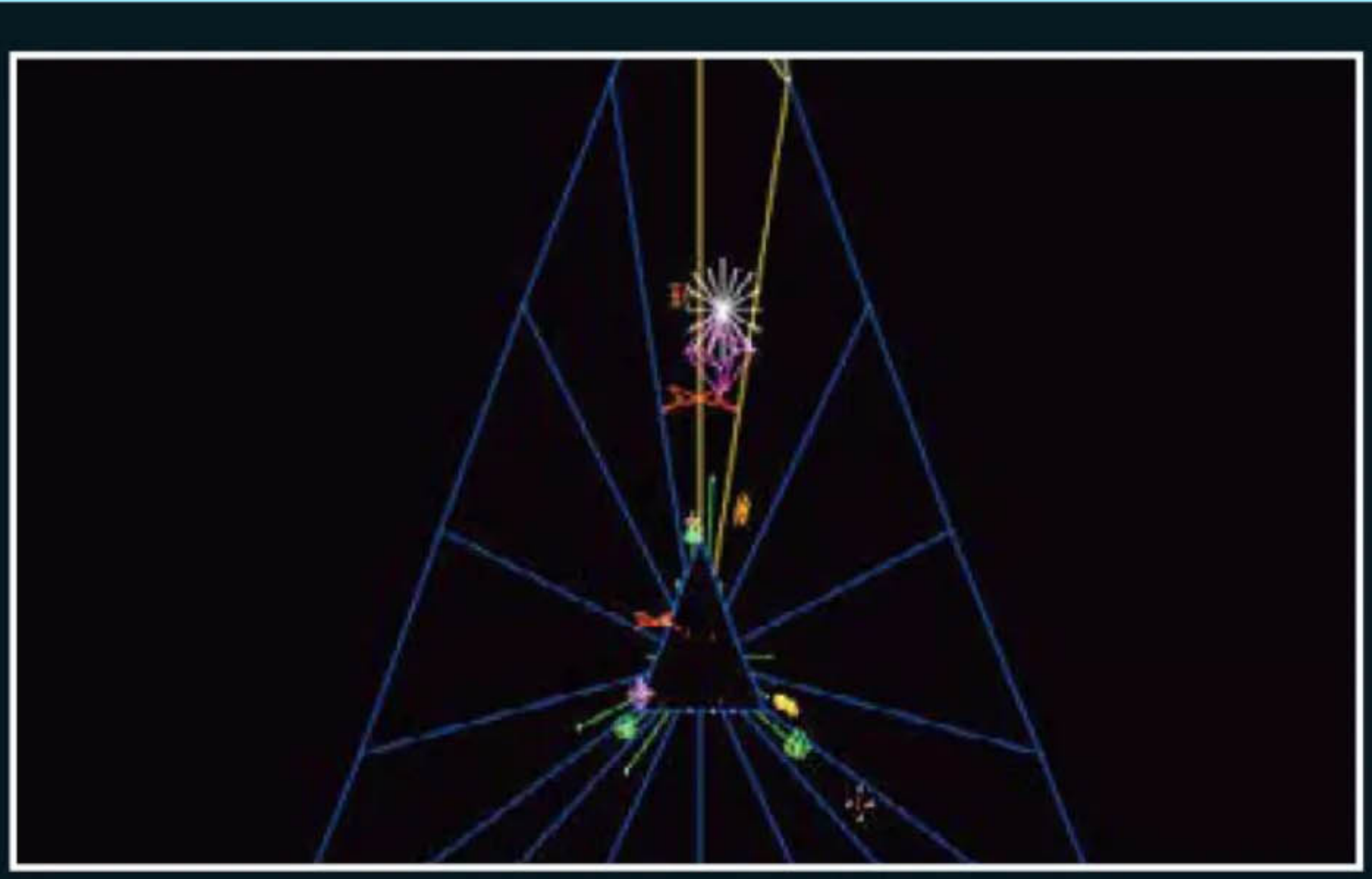


In 1974, due to mounting losses, Atari decided to sell its fledgling Japanese operation, run by Hideyuki Nakajima, to Namco. Hideyuki agreed to stay on and run Namco's new division, which would initially release licensed Atari games before moving on to producing its own. Thus started a long partnership between the two companies. By the early Eighties it was Atari that was licensing out Namco games, and these were such big hits that many are frequently regarded by many as Atari-created titles today, such as *Dig Dug*, *Pole Position* and *Xevious*.

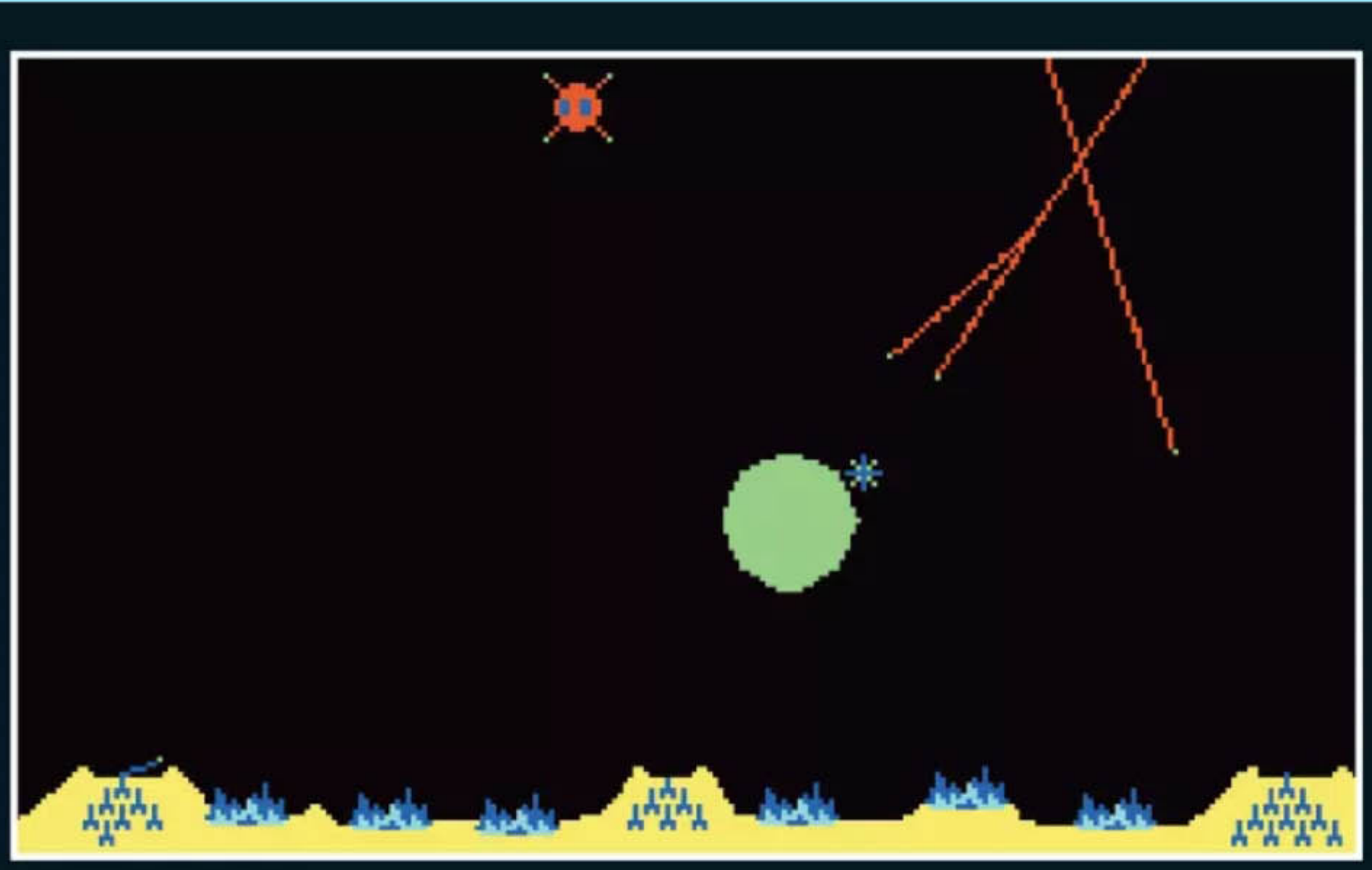
By February 1985, Namco purchased the Atari arcade division, by then known as Atari Games. Hideyuki was sent to oversee all of Namco's US operations, and by 1987 had pooled his own money together with other Atari Games employees to buy the company from Namco and make it employee-owned. Shortly after the purchase he created Tengen to allow Atari Games to enter the home console market. In 1994, Hideyuki and the rest of the Atari Games staff sold their company back to Warner, then known as Time Warner. Sadly, Hideyuki's long association with the Atari brand would itself end later that year when he passed away on 11 June 1994 from lung cancer.

The Camp Experience That Lasts a Lifetime.
COMPUTER CAMP
MY COMPUTER UNDERSTANDS ME
ATARI COMPUTER CAMPS

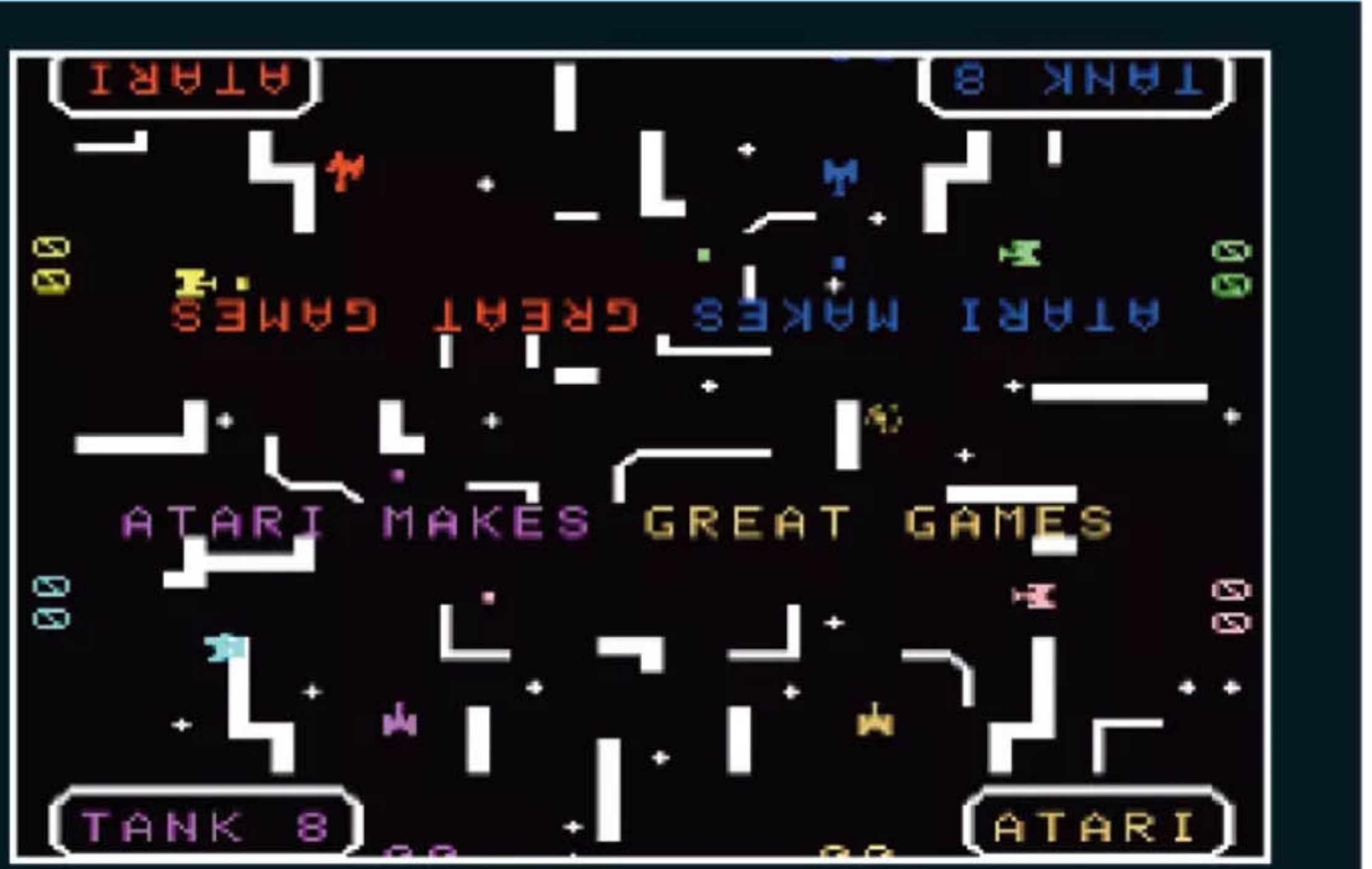
» Atari ran several camps across the US, where kids could program their Atari 800 in between distractions like swimming and hiking.



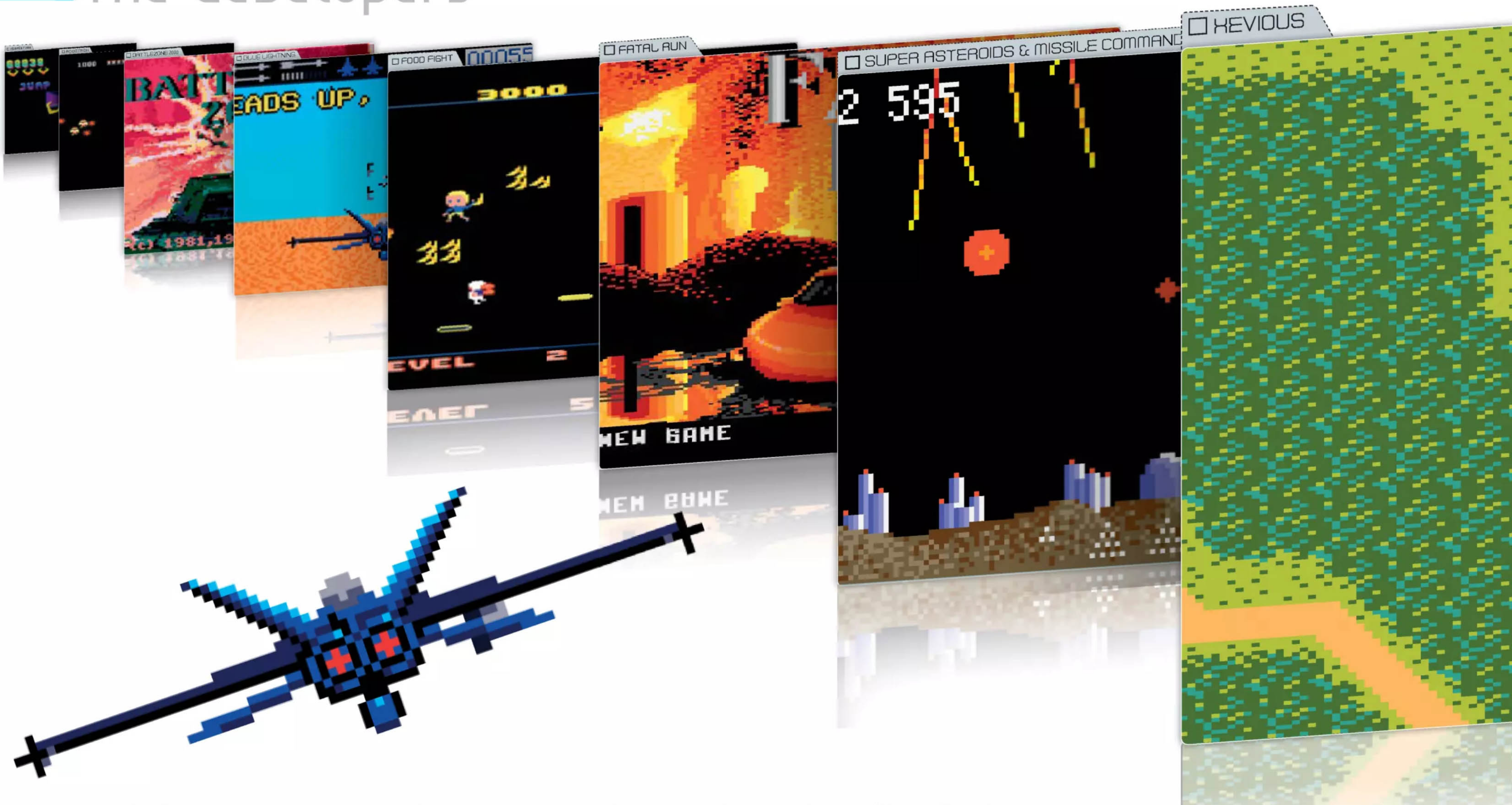
Tempest [1980]
Atari's first colour vector game, this fast-paced shooter that has you rotating around geometric shapes is again one that just looks best on a vector monitor. A capable home version wasn't released until *Tempest 2000* for the Jaguar.



Missile Command [1980]
Global thermonuclear war, Atari style. The home ports dumbed down the gameplay for use with a single joystick and button. Accordingly, Atari engineer Dan Kramer was inspired to design a home version of the arcade trackball.



Tank [1974]
A classic that many will never have a chance to play, as it's a discrete logic game that therefore cannot be emulated. It's satisfying using dual sticks to manoeuvre your tanks through a maze while you attempt to blast your opponent



ATARI CORPORATION

INSTANT EXPERT

- Atari Corporation was formed from merging Atari, Inc's consumer division with Tramel Technologies Ltd. It was spelt 'Tramel' instead of 'Tramiel' so that people didn't mispronounce the name.
- Jack Tramiel bought Atari's consumer division after being ousted from Commodore. It was purchased primarily for its manufacturing and distributing purposes.
- The Atari 520ST was Jack's answer to his fear of the Japanese entering and dominating the US computer market.
- Atari Corporation re-released the Atari 7800 after settling debts with the developer GCC. It was not in response to the release of Nintendo's NES as many thought.
- The XEGS was meant to be the "5200 done right", also using Atari's 8-bit computer internals but making the console expandable to a full Atari computer with the addition of a keyboard.
- The Atari Lynx was developed under software publisher Epyx as the Handy. Atari Corporation initially licensed it but received full ownership of the hardware after Epyx went bankrupt.
- The Atari Portfolio was the world's first MS-DOS-compatible palmtop computer.
- The Atari Falcon was the last computer ever sold under the Atari name. It was on the market for just a year.

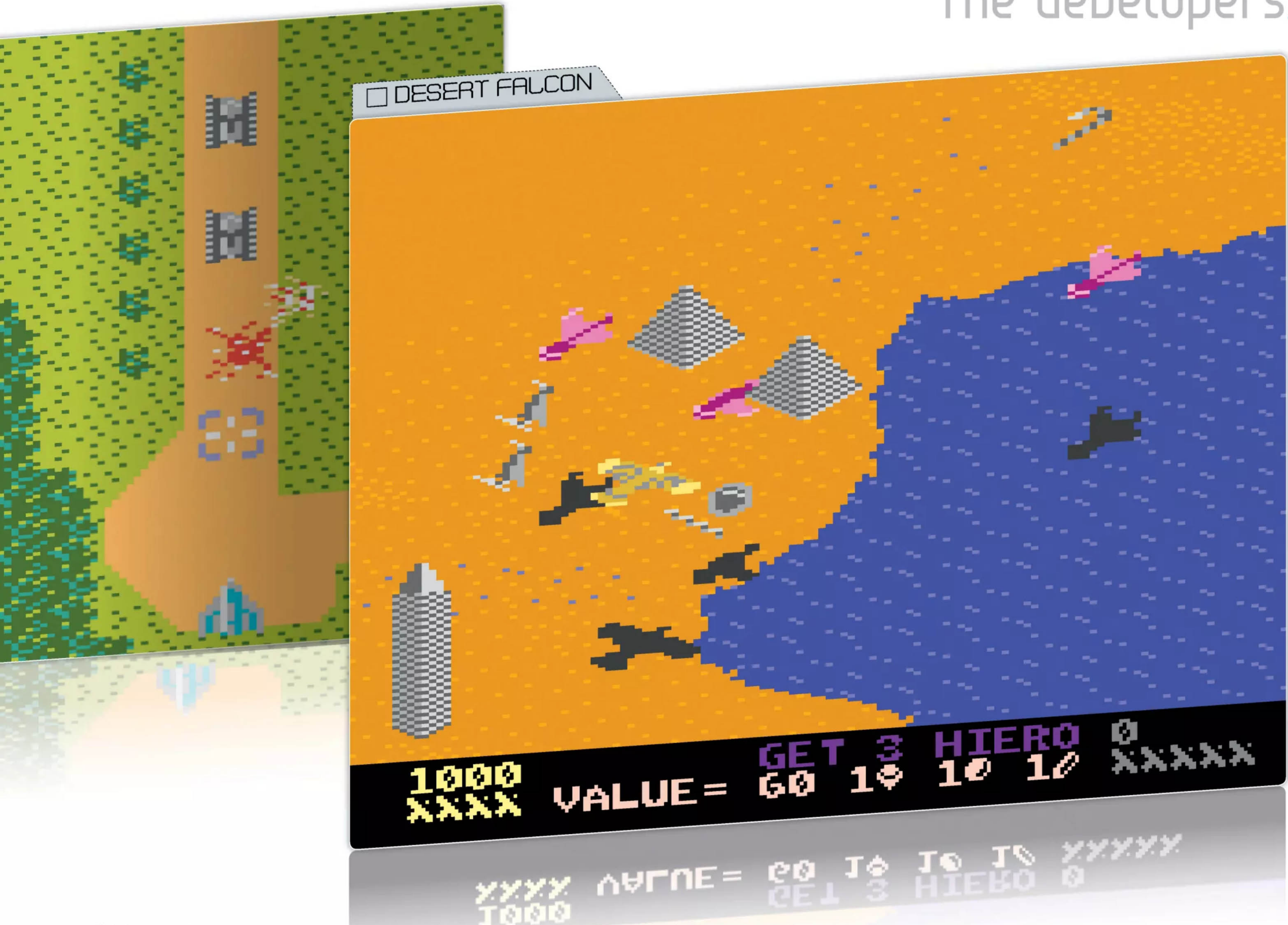
OUT OF THE ASHES OF ATARI, INC ROSE A NEW COMPANY, ATARI CORPORATION, AS WELL AS A SECOND CHANCE FOR RECENTLY OUSTED COMMODORE FOUNDER JACK TRAMIEL. IT WASN'T AN EASY TRANSITION…

Normally, coming back to work from a 4 July weekend in the US is an uneventful affair. It's an extra-long weekend, and employees are refreshed after spending time with friends and family celebrating America's independence. Even more so for 1984's celebrations, as the fourth fell on a Wednesday that year and many employees at Atari took off the two preceding days to have a nice five-day weekend. Those same employees found themselves coming back on the fifth to a company ripped in half. Literally.

Over that weekend, Warner Communications executives had conducted a series of secret negotiation meetings with former Commodore head Jack Tramiel for the purchase of Atari's consumer division as well as its distribution and manufacturing network. So secret that Atari's own CEO, James Morgan, had no idea until he was called into one of Atari's meeting rooms to sign the papers. Signing on the dotted line, the consumer division was given to Jack for no money down – just $240 million in long-term notes, and warrants for a 32 per cent interest in Tramiel's new company, Atari Corporation. Warner kept the coin division of Atari, Inc, and Morgan stayed on to oversee the company's further dissolution and its restructuring into the coin-driven Atari Games. Both companies would share Atari, Inc's game properties, with Jack's new company owning the trademarks and home rights. The Atari logo would be shared by both as well, under the stipulation that the coin company would have to include the word 'Games' under its logo. The ensuing transition was fast, furious and sloppy. No long period of board approval since it was just a portion of the company being sold, no time for employees to make transition plans, no time for the wrapping up of ongoing projects and business deals, no time for anything other than mass chaos.

Even Jack had no idea what he was physically getting in the deal, and proceeded to lock down buildings to begin a month-long process of inventory and project evaluations. At that time Atari had consisted of 70 buildings throughout Sunnyvale, Santa Clara, San Jose and Milpitas. The main Sunnyvale headquarters alone had around 35 buildings, whose functions were mixed enough that some of the consumer division's advanced research operations were housed in the coin division's headquarters, unbeknownst to Jack. At other buildings where much of the prototype, promo and project materials were kept, people started pulling up vans and U-Hauls to cart off items en masse. The company mainframe was no less susceptible, and many started deleting their work directories and emails in protest, hiding much of the recent work done under Atari, Inc from Jack and his people.

The projects and buildings weren't the only thing being appraised. Jack and his management team also had to evaluate all the employees that had been part of the consumer division to decide who they were going to take to the new company. Jack's son, Leonard,


DESERT FALCON

“OUR GOAL WAS TO TAKE WHAT WE HAD AND TURN IT INTO A FUNCTIONAL AND PROFITABLE COMPANY BEFORE WE RAN OUT OF MONEY”

LEONARD TRAMIEL

was tasked with leading the project and personnel evaluations. Those who passed joined the new Atari Corporation, and those who didn’t were technically already out of a job with the collapse of Atari, Inc. “Our goal was to take what we had and turn it into a functional and profitable company before we ran out of money,” said Leonard recently. “Hopefully long before. The need to act quickly was obvious for many reasons. It would save money and shorten the anxiety of not knowing. It was really awful; about 1,000 people lost their jobs in about one week.”

One humorous tale did emerge from that time period, however, on a trek up to Atari, Inc’s coin-op headquarters to interview prospective recruits. As Leonard and a colleague entered the building, an employee got on the PA system and warned, “Imperial troops have entered the building,” as if Darth Vader himself were entering the rebel stronghold. “I wound up hiring him,” recalls Leonard.

Jack was still in a precarious financial position, though. He had sunk millions of his own money into the new company to keep operations afloat during July and August while pursuing the mountain of debt owed to Atari, Inc that Warner had him take on, intending to collect it and use it to fund operations for the longer term. Only nobody was paying, and by August Jack was already struggling – a situation that continued into 1985 and resulted in several renegotiations and financial assistance from Warner. To make matters worse, Jack had also taken on most of Atari, Inc’s bad debt as part of his deal, so Warner could get the losses off its books. Likewise, a number of expected money-making products had stayed with Warner, including the recently announced Atari 7800. Adding to the worries, it wasn’t more than a few days after the negotiations that his old company, Commodore, fired a shot across his bow by filing injunctions against his new VP of R&D, Shiraz Shivji, and two other ex-Commodore engineers. They were accused of theft of trade secrets and barred from doing any computer work, effectively shutting down development of his planned new computer for the month of July.

Leonard found the means to strike back in the form of a cancelled cheque. Unbeknownst to them, Warner and Atari, Inc had struck up a deal with the very company that Jack had visited back in April: Amiga Corporation. While Shiraz and other engineers were locked up in a hotel room in April and May,

BY THE NUMBERS

6 The number of consoles released under Atari Corporation: 2600 Jr, 5200 (re-release), 7800, XE Game System, Atari Lynx, Atari Jaguar.

2 The number of titles held by Sam Tramiel at once when he was both CEO and president of Atari Corporation.

3.77 million The number of Atari 7800s sold in the US between 1986 and 1990.

28 The number of Atari computer models released between 1985 and 1993.

51 The number of games released by Atari Corporation for the 7800.

73 The number of games that Atari released for the Lynx.

42 The number of games Atari that released for the Jaguar.

250,000 The number of Jaguars manufactured.

125,000 The number of Jaguars actually sold between 1993 and 1995.

1 The number of employees left at the time of Atari Corporation’s closure.

5 million The number of Lynxs Atari sold.

6502 The 8-bit processor used in the Lynx.

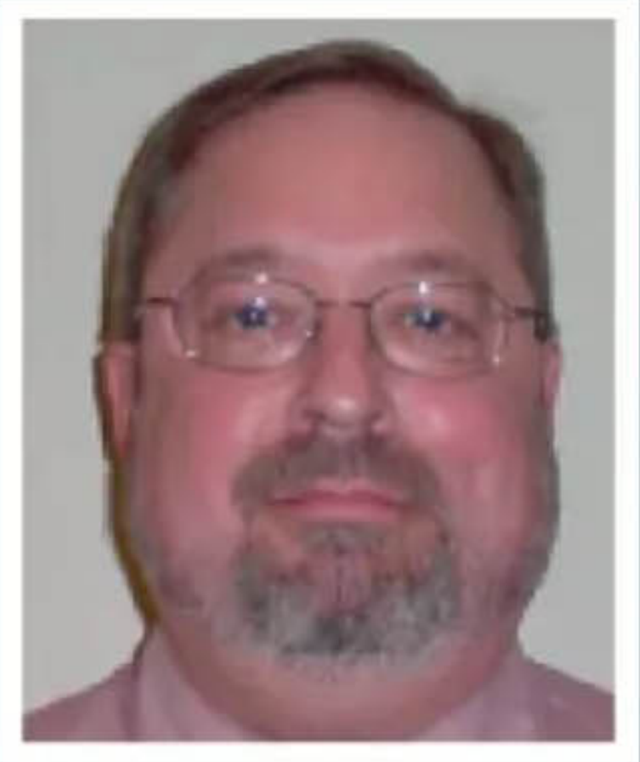
WHERE ARE THEY NOW?

Jack Tramiel
After retiring once JTS collapsed, Jack has spent most of his time out of the limelight. Save for a rare public appearance in 2007 in honour of the 25th anniversary of the Commodore 64, he spends his time enjoying his extended family and donating to places like the US Holocaust Memorial Museum. Unfortunately tragedy struck the Tramiel family when Jack died of heart failure in April 2012. He was 83.

Sam Tramiel
Sam is currently involved in Tramiel Capital, Inc. TCI was founded by Sam in 1996, through which he holds real estate with other family members and makes investments in both high-tech and low-tech businesses, helping to fund a new generation of tech entrepreneurs.

Leonard Tramiel
After Atari Corporation closed down, Leonard went back to his astrophysics roots and became an eighth-grade astronomy teacher. He's also volunteered at the Chabot Space & Science Center since. In 2010 Leonard became the co-ordinator for the Center For Inquiry San Francisco, where he promotes evidence-based inquiry into paranormal and fringe science claims, alternative medicine and mental health practices, religion, secular ethics and society.

Shiraz Shivji
After leaving Atari Corporation in 1989, Shiraz worked for Momenta International, where he developed a pentop computer. By 1999 he found himself as VP of engineering at Canesta, Inc – a designer of low-cost electronic perception technology. He is currently CEO of Giotti, Inc, a medical technology research firm.



John Skruch
The last man out of Atari Corporation moved on to be a project manager at a dotcom for several years until the bubble burst. He's currently the account manager at 8x8, a cloud-based business communications firm.

> "I ACTUALLY CONVINCED THE BOSSES THAT 3D WAS THE WAY TO GO"
> MARTIN BRENNAN

TIMELINE

1984	JACK TRAMIEL RETURNS FROM A WORLD VACATION AND FORMS TRAMEL TECHNOLOGY LTD
1984	JACK BUYS ATARI, INC'S CONSUMER DIVISION FROM WARNER COMMUNICATIONS
1984	WIRE WRAPPING OF THE ST PROTOTYPE, RBP, COMMENCES. COMPLETED BY THE END OF AUGUST, OS DEVELOPMENT BEGINS IN SEPTEMBER
1985	THE ST SERIES DEBUTS AT THE CONSUMER ELECTRONICS SHOW IN LAS VEGAS
1985	JACK BEGINS LOOKING FOR CANDIDATES TO JUMPSTART A NEW VIDEOGAME DIVISION AND RELAUNCH THE 7800
1986	ATARI 7800 IS RELAUNCHED
1986	JACK MANAGES TO BRING ATARI CORPORATION INTO THE BLACK, WIPING OUT ALL DEBT INHERITED FROM ATARI, INC
1987	ATARI CORP INTRODUCES THE XE GAME SYSTEM, MEGA SERIES OF COMPUTERS, AND IBM PC-COMPATIBLE COMPUTERS

ATARI
TEMPEST 2000
ATARI
ATARI
ATARI

Atari Portfolio, the MS-DOS Tempest 2000, and various Atari calculators. Jack briefly tried to get back into the calculator business under Atari.

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planning out a new low-cost, high-power computer to unleash against the Japanese, Jack was visiting various companies along California's coast for possible new technology and facilities to leverage for the new computer. Amiga was one of several companies that Jack had brief flirtations with buying that ultimately went nowhere. Now here was a cancelled cheque for $500,000 and contracts detailing a further licensing agreement that was to have been signed in June between Atari and Amiga. Instead, it appeared the money was returned with interest under the guise of Amiga not getting its custom chips to work. It would have been one of many Atari, Inc projects that faded away had Commodore not announced in July that it was purchasing Amiga and its technology. Renegotiating with Warner during the first week of August 1984 to get ownership of the original contract, Jack launched a countersuit the following week. The two companies locked horns in the courts for the next few years, with Commodore settling out of court in Atari Corp's favour. But the message sent was clear: you may have forced me from my company, but I'm not going away.

The future looks bright…

Throughout the rest of the year, Jack updated the inherited 8-bit line of computers, finishing operating system development of the new 68000-based computer – then named simply RBP (Rock Bottom Price) – slashed prices of warehouses full of console and computer inventory, and negotiated with Warner and GCC over the Atari 7800. At the January 1985 Consumer Electronics Show in Las Vegas, Jack debuted a demo model of his new computer, by this time renamed the ST and soon nicknamed the Jackintosh by the press. Alongside were the 65 and 130XE 8-bit computers and Atari, Inc mainstays like the 2600 and previously cancelled 5200. The slogan of his new ST computer line, 'power without the price', made it clear

1988 JACK TRAMIEL STEPS DOWN AS CEO. SAM TRAMIEL SERVES AS PRESIDENT AND CEO

1989 ATARI CORP DEBUTS THE PORTABLE COLOUR ENTERTAINMENT SYSTEM, SOON TO BE CALLED THE LYNX

1991 ATARI CORP DISCONTINUES THE ATARI 2600, 5200, 7800 AND XE GAME SYSTEM

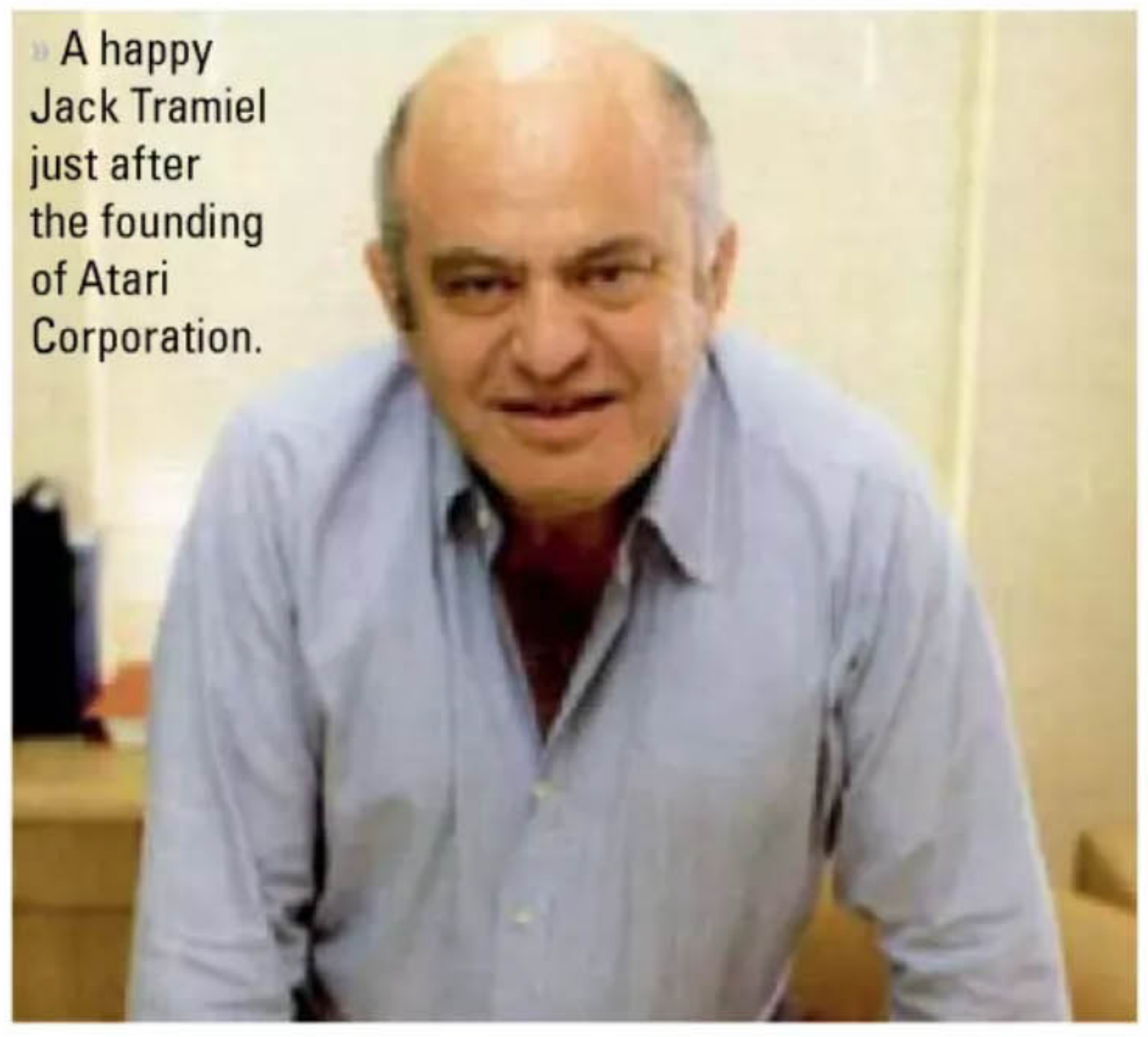
1992 ATARI CORP INTRODUCES THE ATARI FALCON030, ITS LAST COMPUTER

1993 ATARI CORP INTRODUCES THE JAGUAR

1996 ATARI CORP MERGES WITH JTS CORPORATION

1998 JTS CORPORATION SELLS ALL ATARI ASSETS TO HASBRO FOR $5 MILLION

> “IN ORDER FOR A CONSOLE TO BE SUCCESSFUL IT’S ABOUT THE HOT LAUNCH TITLES”
>
> MICHAEL KATZ


» A happy Jack Tramiel just after the founding of Atari Corporation.

that Jack intended to do again what he had done with the Commodore 64: provide a powerful mid-range computer for a low-end price that undercuts everyone.

Sales of price-reduced videogame and 8-bit computer back stock generated more income throughout 1985, allowing Jack to put more into the launch of the first two computers of the ST line – the 520 and 1040ST – that summer. Unfortunately, some of those gains were made possible with a reduction in the workforce, from 2,000 employees the previous summer to 165 by June. Jack also reached an agreement with Warner to pay GCC for the 7800’s development and ten launch titles.

By August of 1985 he was looking to restart his videogame division. Michael Katz was tapped from Epyx to do just that, and he changed the consumer division into the entertainment electronics division. Katz’s vision was to have Atari Corporation expand to all electronic toys, not just videogames. He immediately set about getting more licences together for the relaunch of the 7800 as well as launching the delayed cost-reduced 2600, sometimes referred to as the 2600 Jr, at the magic price point of $50.

The 7800 was relaunched at the January 1986 CES, and by April the announcement was out: Jack had done it. Atari Corporation was out of the red and in the black, and the brand was profitable again. The 7800s that had been sitting in warehouses since 1984 quickly sold out, and by the time of the June 1986 CES Atari was once again ‘hot’ for both computers and consoles. All was rosy, except for a Japanese company by the name of Nintendo and its Nintendo Entertainment System.

Katz had first heard of Nintendo in the US market while he was looking for arcade licences for the 7800 in November 1985, finding many of them already snatched up for the NES. But with the company having no reputation among retail channels other than a test market in New York, nothing was thought of it. By the time of the June show, however, it had expanded to Los Angeles and was growing. The fact that both Atari and Nintendo, as well as the emerging Sega, were releasing consoles was taken as a sign that the consumer videogame market in the US was returning – and with a vengeance.

» The Jaguar era art team going out for sushi.

On the heels of the ‘official’ national 7800 launch, Atari Corporation went public with its stock, giving it the money to pay back Warner for all loans and leaving it with 48 per cent of a profitable brand.

Flying high with Atari

By 1987, operations were in full force at Atari Corporation. The 7800 was the number two console in the US, and the cost-reduced 2600 was a top-selling low-end console, which was ensuring that Atari was flush with cash. Not one to settle for anything except total market domination, Jack decided to attack the rising Nintendo with a high-end console with capabilities that would set it further apart: the ability to expand into a full computer.

“We wanted to do the 5200 done right,” says Leonard. Michael Katz was of the opposite mindset: “In order for a console to be successful it’s about the hot launch titles. You need a hot title for the launch. We didn’t have one and I was against releasing the console, but Jack insisted on it anyway.”

The XE Game System (XEGS) was released to consumers as a console with a bundled lightgun and built-in computer version of *Missile Command*. Why that particular version of the game? Because under the hood, the XEGS was powered by a 65XE computer. Driving home the fact even further was the curious distribution methods being mainly used by computer speciality stores.

On the computer front, sales were good but frustrating. Rather than investing dollars in research to significantly update the ST family’s operating system (GEM and TOS), Atari Corp instead released a continuing flow of hardware revisions as new models. By 1987 Atari had released the 520ST, 520STM (with television modulator), 520STF (with a built-in floppy drive) and 520STFM (both the modulator and floppy). Likewise, it had released the 1040STF (520ST with an extra 1MB RAM and an internal floppy drive), and the 1040STFM (1040STF with TV modulator).

Added to this was Atari’s entry into the workstation market, the Mega ST series, with models that represented arbitrary hardware upgrades – Mega 1, 2 and 4 simply refer to the amount of RAM in the machines. Inside, the Mega itself introduced some features that Atari ST users had been asking for: a card expansion slot and detached keyboard. There was also Atari’s new Blitter graphics co-processor chip… at least for some of the models, once again causing confusion among retailers and consumers. As if to hedge his bets in this new high-end business market, Jack also had Atari Corporation start an IBM PC clone line called the Atari PC.

One lingering obstacle still remained in the way of raising sales of the ST line: the legend of Jack Tramiel. While sales of the ST range were strong in Europe, Jack’s days as head of Commodore had left a bad taste in the mouths of many of the larger US retail chains, and getting into them was a challenge. Jack had been focusing on smaller speciality computer stores and made some headway in music stores thanks to the built-in MIDI support’s popularity with musicians, but in a move that foreshadowed Gateway’s and Apple’s similar moves in the late Nineties and 2000s, Jack sought to get around the retail problem by creating his own stores. The answer was to purchase electronics chain Federated Electronics and install his second son Garry, then a VP at Atari Corporation, as its president.

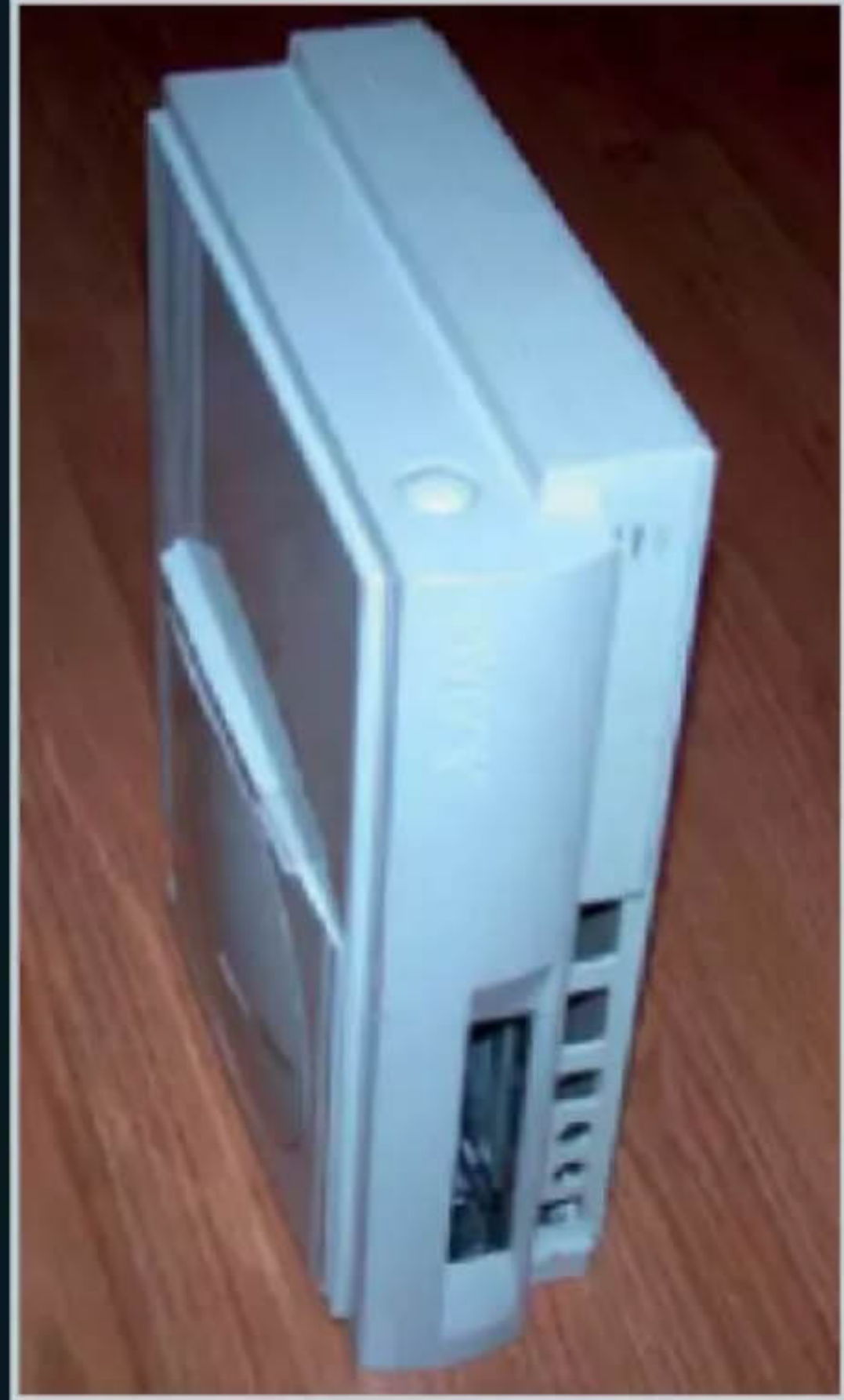
Together forever

1988 became a year of transition at Atari Corporation. Jack had his overall goal accomplished – a strong company and legacy that he could leave his sons to run – so he made plans to retire from daily operations and have his son Sam take over the CEO position in addition to his current duties as president. Jack would remain involved in larger decisions as chairman of Atari Corporation’s board, but otherwise Sam was in charge of everything as of that May.

Even though the distance between Atari and Nintendo in the console market had widened, Atari continued its trifecta approach of the 2600, 7800 and XEGS, releasing 45 new games for those systems.

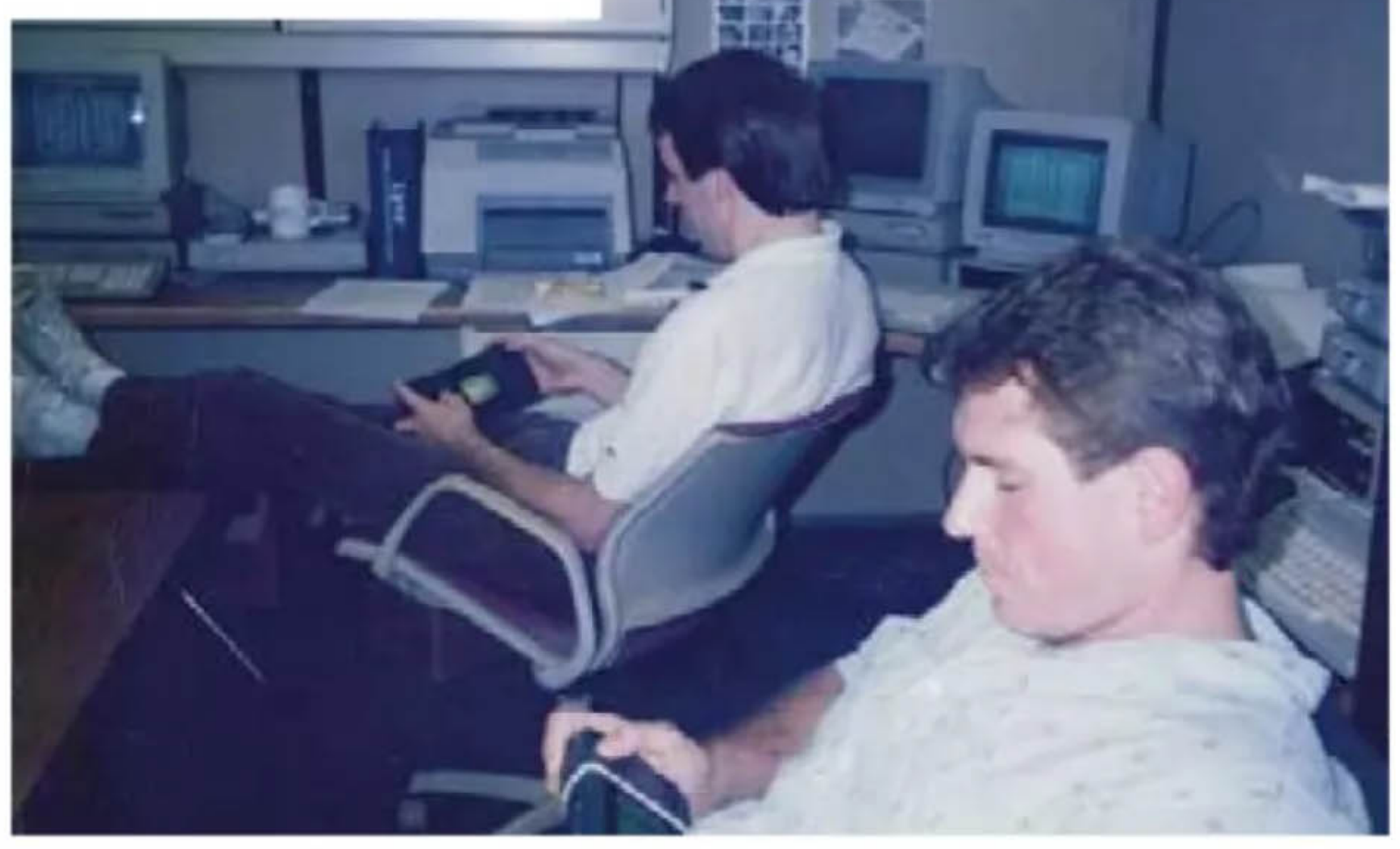
ATARI MICROBOX

Atari was working on three different replacements for the Falcon at one point, all of which were cancelled to focus on the Jaguar: a full 32-bit version, a 68040 version, and a version called Painter that would use the Jaguar chipset. All were to fit into a new stylish workstation-oriented case called the Microbox. If the Microbox case looks familiar, it’s because Sony licensed elements of the case for the PS2. How did it know about it? Many ex-Atari Corporation people wound up at Sony after the 1995 purge.



The developers

» Viewing the Batmobile, on display at Atari HQ as part of the Lynx *Batman* release festivities.



» Lynx programmers Eric Ginner and Jerome Strach at work.

However, the real important developments at the company were happening behind the scenes.

Seeing the writing on the wall, Atari began work on a replacement for the 7800 and XEGS called the Super XE, which soon morphed into a way to leverage the ST's internals for use in a 16-bit games console. Atari found that it was not alone in looking at this new market when Sega of America contacted it. Although the Master System had done well internationally, in the US it placed third behind the NES and Atari's 7800. Sega was looking to strike up a partnership with Atari by having its upcoming 16-bit Mega Drive system released in the US as an Atari-branded product. Serious talks ensued but ultimately fell apart, as Jack wanted international rights, as well as the US.

A licensing relationship with Katz's old company, Epyx, was further expanded that year to include hardware. Epyx had been having financial problems and was looking for assistance to get its Handy handheld game console to the market. The deal struck had Atari manufacturing and distributing all the Handy units under its own name, while Epyx would provide all the software. By the time it would come to fruition in 1989 as the Atari Lynx, Epyx was going bankrupt and the entire rights to the powerful colour handheld system would move over to Atari.

ATARI VS COMMODORE

Probably no other aspect of Atari Corporation inspires debates to this day than the Atari/Commodore rivalry – or Atari/Amiga, that is. This is mainly due to the intertwined relationship between both companies, with Jack Tramiel being the head of both at different points in time. Unfortunately the truth is far more mundane than the exciting legends, which include stories of Jack buying Atari to get back at Commodore, Jack developing the ST in response to 'losing the Amiga', and a fanciful last-minute save when Commodore bought Amiga.

The truth is that Jack fully intended to retire after leaving Commodore, initially departing on a vacation around the world. Telling friends the only way he'd get back in was if the Japanese were coming into the market and he felt that nobody was strong enough to compete, by March those feelings got the best of him. Forming Tramel Technology Ltd, various key Commodore personnel left to join him. By April and May, Commodore engineers like Shiraz Shivji had also left and were holed up in a nondescript hotel room in California, designing the next computer that was never based around any Amiga technology. At the time when Jack purchased Atari Consumer, development of the ST was 90 per cent done.

While getting complete ownership of the Lynx in 1989 would position Atari at the forefront of the coming handheld console revolution, 1989 would also be the year that Atari and Jack's legacy began to unravel. The first sign was on 31 January 1989, when Atari Corporation filed a $250 million lawsuit against Nintendo for its restrictive third-party licensing practices that locked in the most popular developers to only write games for Nintendo's platform. While not the only company to complain and go to court over the policy, it signified the beginning of an era of lawsuits launched by Atari Corporation to either change the marketplace in its favour or gain more money. It ultimately lost the Nintendo case, but by the time it was decided Nintendo had dropped the practice anyway and begun focusing on the upcoming Super Nintendo. However, Atari would later win a series of patent violations against Sega, which resulted in an influx of cash and licensing deals that brought Sega games to Atari platforms.

In February Michael Katz left, ostensibly to retire, but by the end of the year he was at Sega of America as its new CEO, positioning the freshly launched Sega Genesis to be the dominant console of the early Nineties. And as the final blow in a flurry of punches, in March Atari announced that it was selling off Federated Electronics. Jack's distribution plan had not worked, and instead the operation had siphoned off more money from Atari because it needed constant financial support to stay afloat.

Atari finally put out something more than an incremental computer update, the foremost was the introduction of the 1040STE, although some would argue that it was too little, too late. Joining the 1040STE in 1989, however, were the Atari TT and Stacy laptop. The TT jumped Atari's computer offering into 32-bit territory as a high-end workstation, retailing for almost $3,000 when it hit the market the following year. The Stacy, while not Atari Corporation's first attempt at a portable computer, did represent its first attempt at bringing the ST into the laptop realm – or what passed for them at that time. Probably the most promising for the future of Atari Corporation in 1989 were relationships struck up with two British firms. First was Distributed Information Processing (DIP), which had managed to produce the world's first palmtop computer that was also fully compatible with MS-DOS. Licensing that and releasing it as the Atari Portfolio put the brand at the forefront of mobile computing at the time, if only for a little while.

The second relationship was with Flare Technology, a group of former Sinclair engineers who left to start their own company around developing an idea that they had for a multi-chip system that became the Flare One. By that time, the Super XE console had transformed into an advanced 32-bit system that leveraged ST technology with the short-lived Atari Transputer's graphics card. When Flare got involved, it had no sound and no name. Flare employee Martin Brennan suggested naming it after his wife's new car, the Panther Kallista, and the project received its last in a string of names: the Atari Panther. Three games were written on the unfinished platform along with some material that legendary British coder Jeff Minter had been coding, before Brennan talked Atari into abandoning the Panther for a brand new 3D platform.

"While I was over in California in '89," begins Martin, "I actually convinced the bosses at Atari that 3D was the way to go, with the experience we'd gained on Flare One – if you didn't just do flat rendering but shaded rendering, you got a 3D appearance. At the time, I was seeing pictures in magazines where computers were rendering photorealistic 3D wire meshes and I said: 'These are static images, but they only contain a very low number of polygons. We could take that, animate it and you could produce a game that was a quantum leap away from the current games.'" And so, what was to be Atari's last games console, the Jaguar, was born on the strength of a promise made in 1989.

This is the end…

Microsoft's release of Windows 3.1 in 1992 began the dominance of the 'Wintel' (Windows running on Intel hardware) platform, and suddenly Atari and Amiga found their computers being relegated to the niche markets of music and video production respectively. Atari Corporation's 8-bit consoles and computers had become amoebic in sales, to the extent that support for all of them was dropped as of 1 January 1992. Atari tried to soldier on with further updates in the ST line via the Mega STE, the STBook laptop, and its final computer, the Atari Falcon. On the market for a year, its

» [Jaguar] *Fight For Life* was created by Francois Bertrand, who worked on *Virtua Fighter*, it was panned on release.

MPH
60
START

cancellation signified Atari leaving the computer industry altogether in favour of focusing on its Jaguar console.

Besides the limited computer sales, the Lynx was all but carrying Atari at the time. It had enjoyed decent sales, but this was the first device under Atari Corporation that could not be delivered under its 'power without the price' slogan; the colour LCD screen assured that Sam Tramiel could not drop the price of the Lynx to be competitive with Nintendo's cheaper Game Boy. To Sam's credit, though, Atari still scored some major tie-ins like *Batman Returns*, for which a 15-minute Lynx commercial played in cinemas before screenings. He also managed to get placements for the Lynx in youth-oriented TV shows like *Full House* and *Parker Lewis Can't Lose*, as well as movies such as *If Looks Could Kill* (*Teen Agent*) and *Child's Play 3*. There was the multitude of licensed ports of coin-op games by Atari Corporation's now distant cousin, Atari Games, such as *APB*, *Gauntlet* and the excellent *S.T.U.N. Runner*. However, it was becoming apparent to Atari that it needed to focus on the Jaguar, which across 1993 and 1994 was generating the bulk of the company's sales.

That promise of a 3D games console future for Atari had manifested itself in the release of the Jaguar in late 1993, a complicated multiprocessor system with a mixture of 64-bit and 32-bit graphics and sound processing, along with a venerable 16-bit 68000 chip meant for bootstrapping, all of which should have been a crowning achievement. Instead, Atari forced Flair to rush to finish development of the custom hardware in 1991 and do product testing during 1992. The end result was some bugs in the hardware, a development manual written by Atari people who were not completely familiar with the architecture, and buggy and poorly written development software. A small internal game development budget and outrageous licensing and development fees for third-party developers made the best success repellant in the world. Many of the established publishers and studios stayed away from the platform, and those that didn't simply ignored its complex multiprocessor architecture in favour of using the 68000 as the main processor. Doing so instead of shutting it off after booting, which was the intended use, ensured that the Jaguar was limited to an expensive 16-bit machine for many games. In fact, some of the games were simply ported code from the 16-bit Genesis with graphics that fell far below the Jaguar's true capabilities.

ATARI PC
Compatible Power Without the Price!
ATARI
Power Without the Price™

As Atari Corporation was releasing its overdue and hyped CD unit for the Jaguar in September of 1995, it found itself in the precarious position of being sandwiched between two 'next-gen' console releases: the Sega Saturn and Sony PlayStation. Both released the previous year in Japan and were becoming runaway successes in comparison, and the Jaguar's paltry offering of games that made little use of its hardware were already looking dated next to consoles that were just getting started. Sam Tramiel downplayed the rival systems and their capabilities in an interview in Next Generation magazine, which is now legendary for Sam seeming to be so out of touch with the reality of Atari's position at the time.

The financial situation behind the scenes was dismal. By the end of 1995, Atari Corporation's sales declined by more than half, from $38.7 million in 1994 to $14.6 million in 1995. Since its introduction in 1993, Atari had only sold approximately 125,000 Jaguars – 100,000 by the end of 1994 and a paltry 25,000 for all of 1995. And as low as it was, that 25,000 represented 76 per cent of the $14.6 million figure. In other words, the company was sinking fast because it had decided to bet everything on the Jaguar.

What also soon became apparent was that the weight of the company wasn't just on the Jaguar but almost squarely on Sam Tramiel as well. He would suffer a heart attack, which in hindsight put the Next Generation interview in the light of a CEO desperately trying to keep up appearances. After the heart attack, Jack came out of his retirement from daily operations and was met with a far different company to the one he'd left. Jack immediately significantly downsized the Jaguar programme in November of 1995, cancelling the cost-reduced combination of both the Jaguar and it's add-on CD unit called the CoJag and a more competitive Jaguar II. Major layoffs followed that very month, as well as soon shutting down the Atari Interactive MS-DOS game-porting initiative and any other recent project efforts as well. By January he began looking for a way to sell off the company before it and the money coming in from recent lawsuits was completely gone. He eventually found the answer in the up-and-coming hard drive manufacturer JT Storage.

THE 'OTHER' ATARI

Atari, Inc's coin division was spun off by Warner as Atari Games in 1984, and soon after it sold a controlling interest to Namco. In 1987 Hide Nakajima resigned from his board position and, with Atari Games employees, bought 20 per cent of Namco's interest, essentially leaving the company under employee control. Under Nakajima, Atari Games entered the console arena as Tengen and ended up suing Nintendo over its restrictive licensing practices.

Namco sold out completely to Warner in 1990, giving it majority ownership, with Nakajima and employees selling out their remaining shares on 11 April 1994. A few months later, the coin-op brand's beloved Nakajima passed away from lung cancer. Under Warner, Atari Games became a subsidiary of Time Warner Interactive.

In 1996 Atari Games was sold to WMS Industries subsidiary Williams Interactive, and was eventually transferred under fellow WMS subsidiary and soon to be spun off Midway Games. Midway eventually renamed Atari Games to Midway Games West before closing it down entirely on 7 February 2003.

The merger was announced on 13 February 1996 and occurred in June when Atari Corporation reverse merged with JTS to become a division of a new company called JTS Corporation. Jack and some of the other executives would become board members of this new company, and Jack got the approval of Atari Corporation shareholders based on the promise that Atari would continue operations after the merger. However, as layoffs continued, it became obvious that Jack simply intended to keep things going in as minimal a capacity as possible. The truth couldn't have been clearer than when 1997 finally rolled around and the Atari 'division' of JTS was a solitary person, John Skruch, at a single desk. Skruch was single-handedly handling any remaining Jaguar support, the Atari website and any licensing, such as Activision's acquisition of the rights to *Asteroids* and *Battlezone* to do updates the following year.

Shareholders launched a suit against Jack that continues to this day, claiming that he misrepresented the merger. However, in the interim it would solve nothing as JTS itself was quickly falling down a huge financial pit as well. The company eventually sold off all the Atari Corporation properties and remaining warehouse stock to Hasbro on 28 February 1998 for only $5 million. Although it was the end of the Atari brand proper, it was almost fitting that the last employee left, the one to finally turn off the lights, was Skruch, who had been an employee of both Atari Inc and Atari Corporation. An era had ended…

Special thanks to Leonard Tramiel, BJ West, John Skruch and Don Thomas.

NOLAN BUSHNELL

HE IS THE FATHER OF ELECTRONIC GAMING AND THE CO-FOUNDER OF ATARI INC. AND, DESPITE A LIFETIME ASSOCIATION WITH VIDEOGAMING, NOLAN BUSHNELL'S PASSION FOR GAMES REMAINS STRONG. DAVID CROOKES TALKS TO THE MAN WHO TOOK GAMING TO THE MASSES - AND DISCOVERS WHY HE BELIEVES SOME MODERN GAMES ARE DEGRADING….

IN BRIEF. . .

Nolan Bushnell's jaw drops when he plays Steve Russell's *Spacewar*, a space combat game from the 1960s. So he writes his own version, Computer Space, releasing it as a coin-op - but it fails. He turns his attention to simpler games and puts an idea for a bat and ball title to engineer Al Acorn - and the classic *Pong* was born. It's released by Bushnell and Ted Dabney's new firm, Atari, and is widely credited as laying the foundations for today's videogame industry.

"My vision for Atari was a company which brought technology and consumer electronics to everyday Joe and Moe," says a proud Nolan Bushnell, casting his mind back to 1972.

Back then, Nolan was aged 29 and living in Silicon Valley where he and business colleague Ted Dabney had formed Atari Inc with just $250 dollars each.

Yet from those humble beginning grew a company which dominated the early days of videogaming – and much of that was to do with Nolan himself.

Humble beginnings

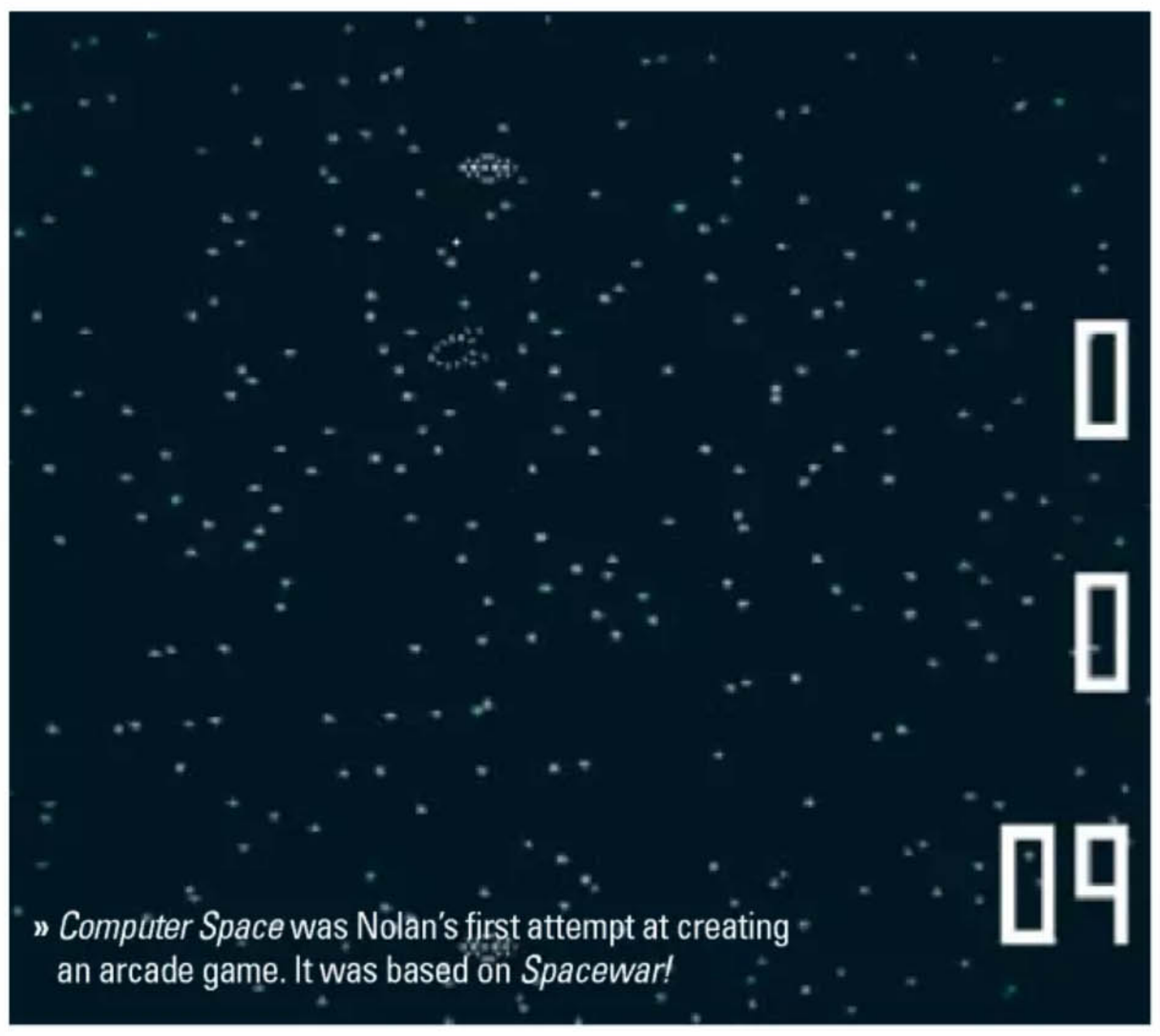
Bushnell was born in 1943 in Clearfield, Utah. Brought up as a Mormon, he has been married twice: first to Paula Nielson and secondly to current wife Nancy Nini. He has three daughters, Alissa, Britta and Neela, and five sons, Brent, Tyler, Gavin, Dylan and Wyatt. Sadly, his father died when Nolan was just 15, leaving him as the man of the house, looking out for his mother and three sisters.

His interest in electronics was sparked by a teacher called Mrs Cook who taught him electricity in the third grade. Nolan became interested in playing with science, hooking up bulbs and batteries and creating new electronic devices.

And as he went through life, he learned from many people around him: a ham radio operator who lived nearby taught him electronics and radio; a boss at the Lagoon Amusement Park in Salt Lake City, in which he worked part-time from the age of 19, gave him lessons in business; and a university lecturer at the University of Utah gave him a grounding in computer graphics. But then his interest was grabbed by a basic space combat game called *Spacewar* – and it would prove to be the catalyst for what would later become a multi-billion pound videogame industry.

"I WANTED TO CREATE A TECHNOLOGICALLY ADVANCED COMPANY"

NOLAN BUSHNELL



» *Computer Space* was Nolan's first attempt at creating an arcade game. It was based on *Spacewar!*

Nolan had already spent a few years during the late 1960s sneaking into the computer labs at the University of Utah to play *Spacewar*, which had been created by Steve Russell on $7 million mainframe PDP-1 computers at the Massachussets Institute for Technology in 1962.

The influence is not lost of Bushell, who juggled going to university with working at the amusement park. "The real credit for kickstarting the videogaming industry has to lie with Steve Russell," he explains. "He was my inspiration. I thought *Spacewar* was fascinating – it was fresh and nobody had created anything like it before. From the moment I played it, I wanted to write my own programmes – the potential for videogaming was there."

Yet after leaving university in 1968, he was faced with two choices, neither of which involved videogames. He could take up a well-paid job as the amusement park manager or become an engineer with a company called Ampex, the company which invented videotape. He decided to chose the latter.

But that vision of *Spacewar* remained strong and in 1971, Nolan, along with Ted Dabney, created his own version called *Computer Space* on a cheaper, less advanced machine. "*Computer Space* was more complex than *Spacewar*," continues Bushnell. "As an engineer and technologist I wanted to create something impressive. It was as much about the techniques of the game as the game itself, but it had to be fun to play. You see, from a technology perspective, everything was very hard to do in the initial early years and, from *Computer Space* onwards, I had to develop some games that could be done with the limits of the technology at the time."

» **Left:** For such a basic game, it was fitting that the casing would be basic too, the word *Pong* being the only eye-catching feature. **Above:** Beautiful, slim and stunning - and that's just the coin-op machine: Computer Space was Bushnell's first attempt at an arcade game.

Whereas *Spacewar* had been created to show off the power and capabilities of the PDP-1, Nolan wanted *Computer Space* to be a commercial product.

Dabney was interested and they joined, selling the concept to coin-op machine manufacturer Nutting Associates in 1971. A total of 1,500 Computer Space cabinets were made, a failed venture that paid just $500.

Yet the pair were undeterred and sunk the cash into a new venture. Nolan wanted to call the new firm Syzygy but the name was already taken - instead they decided to call their company the Japanese-sounding Atari.

"I wanted to created a technologically advanced company, one which would push boundaries," Bushnell said. "There's no question that we did this. We had a great crew and very, very smart people working for us and we were innovating all the time. One of my philosophies was to create a place where people enjoyed working. We were all interested in creating games and we liked to play what we were creating and that, I think, marked us out and made us successful. And remember, I didn't invent videogames. They had already been created – that's how I became interested in them. I just made them commercial."

Nolan created a casual work environment which threw out the rule book – there were no car parking spaces for directors and jeans were allowed in the office.

And then he employed engineer Al Acorn who had previously worked with Bushnell. His first task was to create a simple ping-pong game based on a version that had been released for the Magnavox Odyssey console.

Al went to work, having been told by Bushnell that it would be released by General Electric and that other business deals were in place.

> "I DIDN'T INVENT VIDEOGAMES. THEY HAD ALREADY BEEN CREATED - THAT'S HOW I BECAME INTERESTED IN THEM. I JUST MADE THEM COMMERCIAL"
>
> NOLAN BUSHNELL

These claims were false. Nolan actually wanted to see how Al would perform as he had very little knowledge of videogames at the time and he wanted to test him.

Bushnell says: "When I devised what became *Pong* and put it to Al Alcorn, it was meant to be a training project. It was only supposed to be a throwaway game because we actually wanted to create a driving game at the time. I chose tennis because of it's simplicity, yet when people say I created *Pong*, they're missing something – Al brought a lot to the project and he made it what it was. He deserves a lot of credit for the game."

Despite its simplicity, *Pong* was addictive. And although it was a fresh concept, it was based on familiarity. Nolan realised that people would recognise instantly what they had to do. It was a departure from the complexity of *Computer Space* and it would shape Bushnell's approach to videogaming for the future.

The penny drops

"I began to quickly realise that because of the limited technology available, games had to be fun, good and solid. We were the first to develop videogames so we had to make them simple, easy and quickly understood by players," he continues when we asked him about his approach at the time.

"Yet this wasn't all that easy to do. I think a simple game was harder to create than a complex one because it was impossible to hide a bad game. There was no capacity for putting in nice graphics to mask bad gameplay. I consider early videogames to be like Chess 4,000 years ago. Both have fundamental traits which stood the test of time, and are still adhered to today."

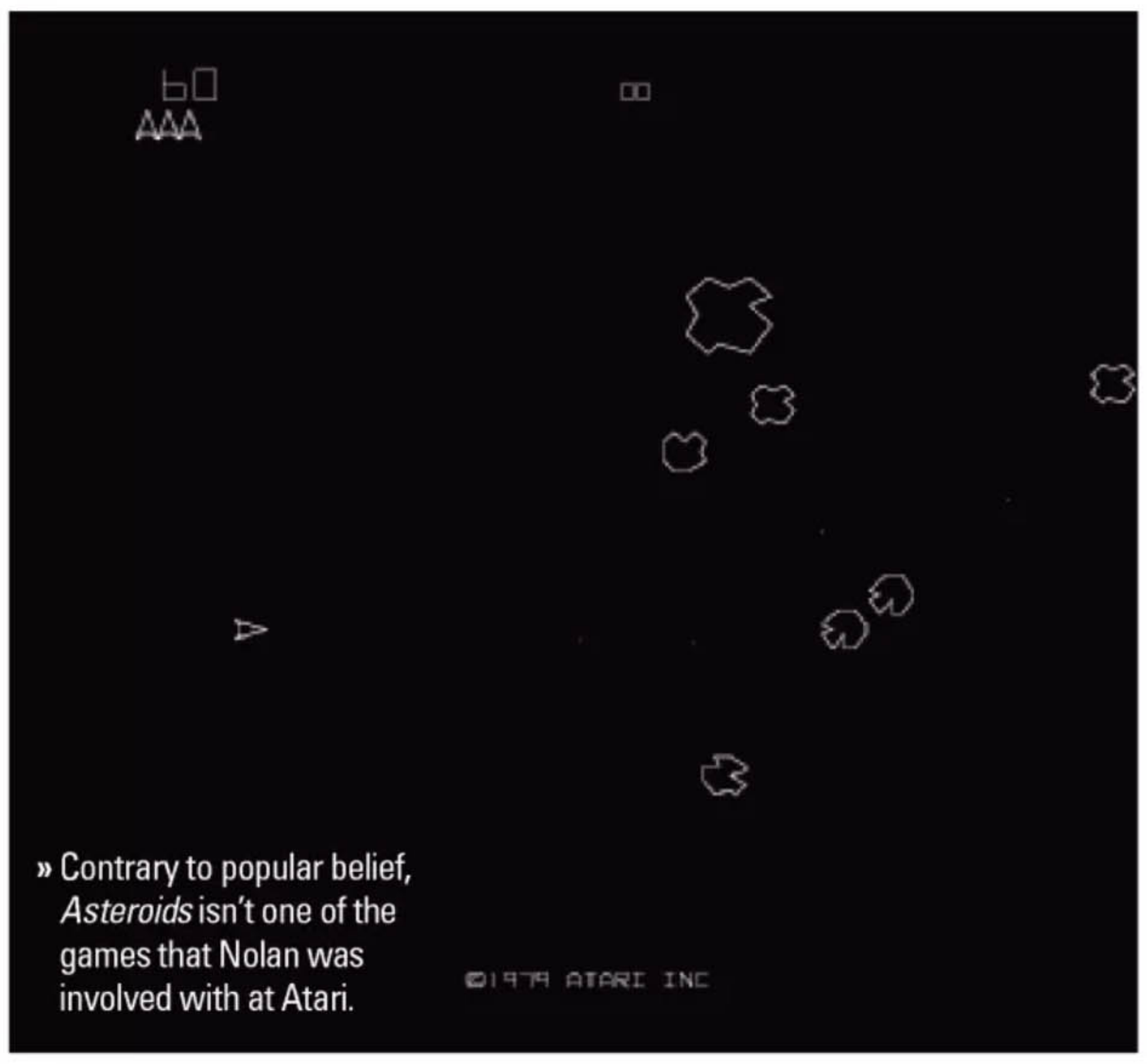
THIS IS A GAME?

Gaming has changed beyond recognition over the past 30 years. It's therefore difficult to make a direct comparison between Atari's *Pong* and Sega's *Virtua Tennis*, other than the basic gameplay of hitting a ball back and forth. But Nolan believes gaming has altered not just in the graphical presentation of titles, but in the way they target audiences, particularly as he believes 40 per cent of the people who played *Pong* were women.

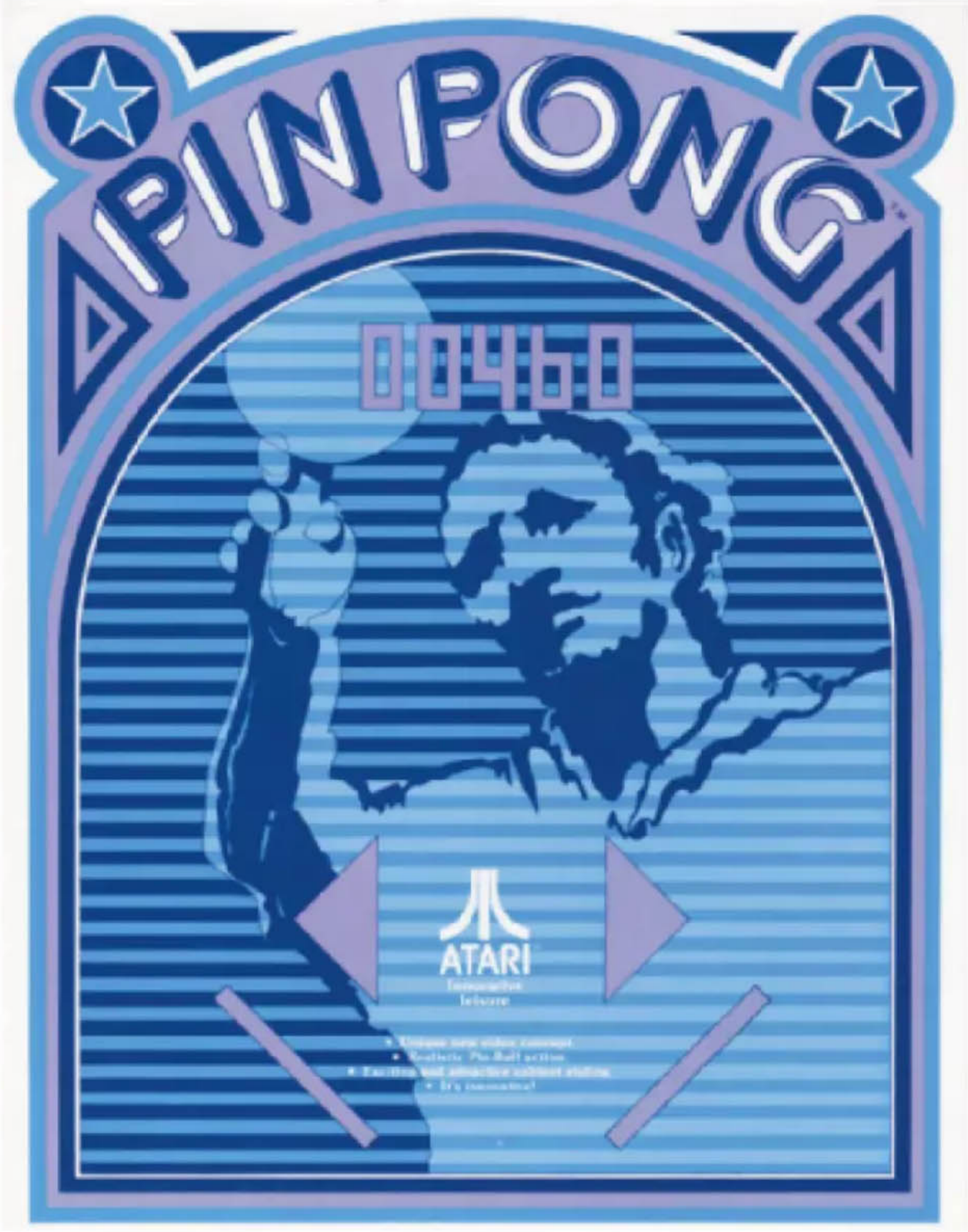
"Unfortunately, the social and female gamer have been left out, by focusing too much on violence or sports. Games are also too complex which leaves out the casual gamer. I believe there is a huge market opportunity in targeting the casual, social or female gamer."

Yet Bushnell reckons Sony and Microsoft have been good for gaming from a technology perspective. "Technology is moving toward photo realism and the steps that have been taken have been very impressive."

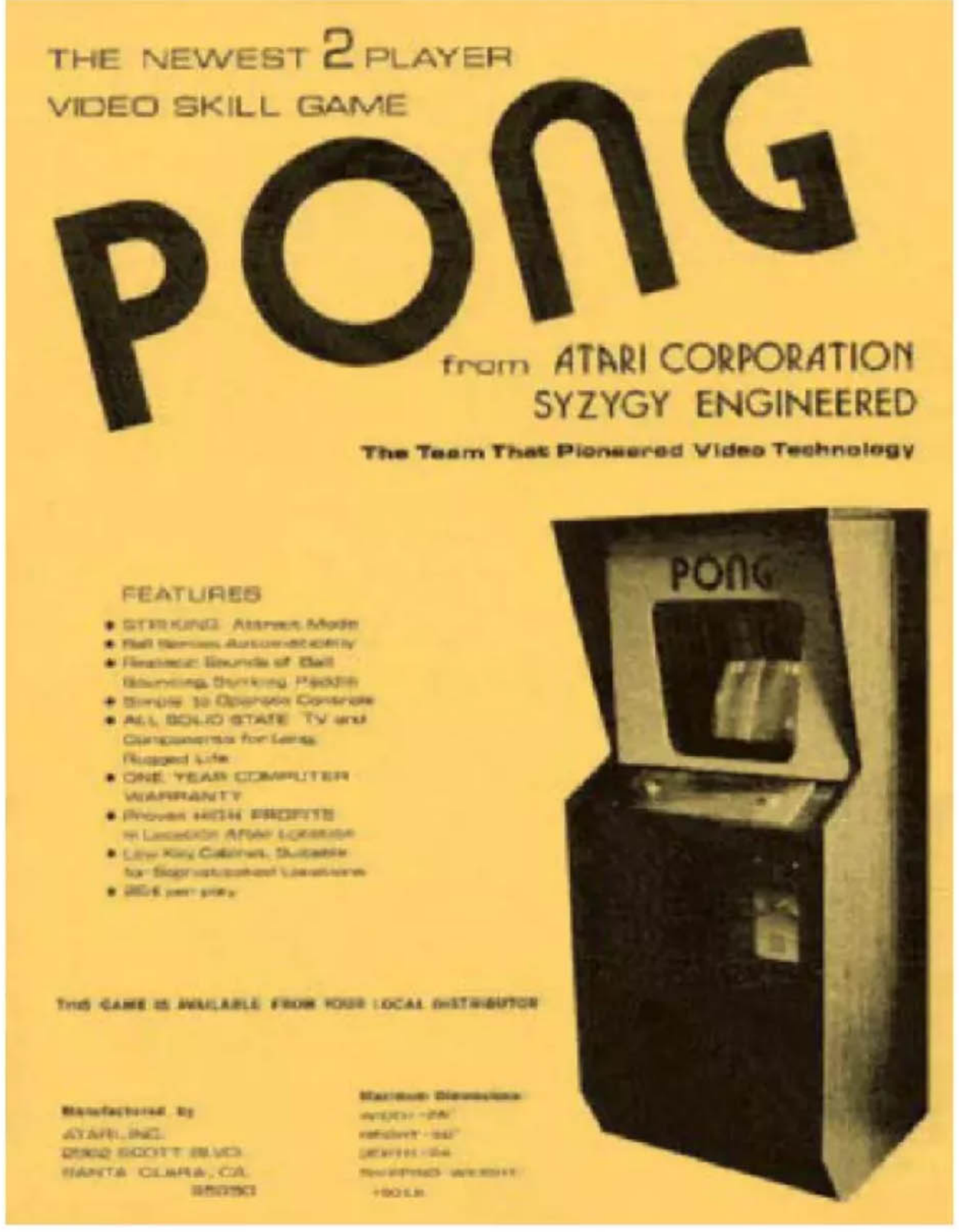
But he objects strongly to games such as *Grand Theft Auto* which recently caused a stir for its sex scenes. "Controversy is a very powerful marketing tool," he says. "A year or so ago, WIRED asked me to present Videogame Of The Year to the makers of *GTA*. "I declined because I don't believe that the degrading nature of the game deserves award."



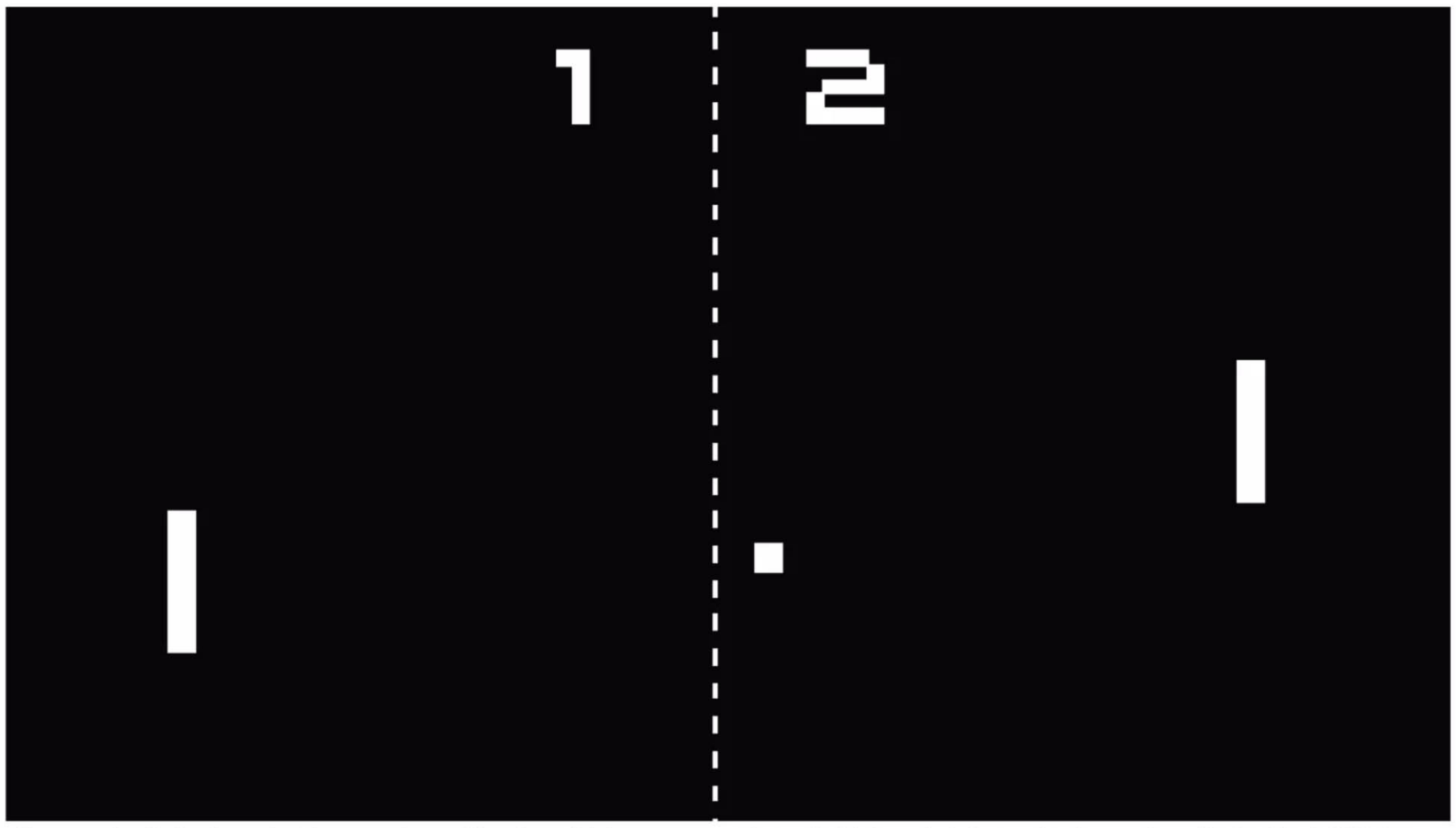
» Contrary to popular belief, *Asteroids* isn't one of the games that Nolan was involved with at Atari.



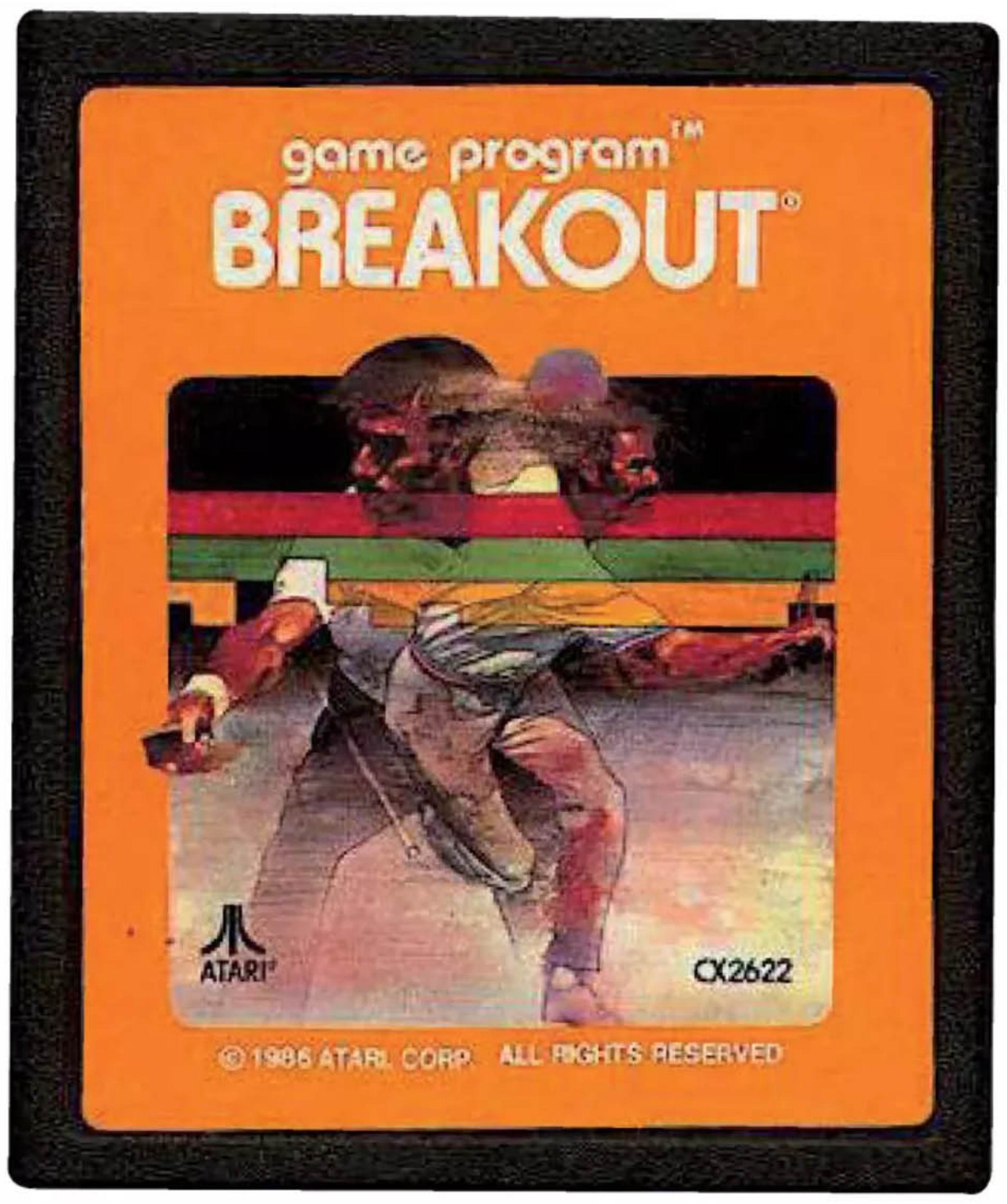
» Looking space-age and sophisticated, this is how Atari advertised its hits.

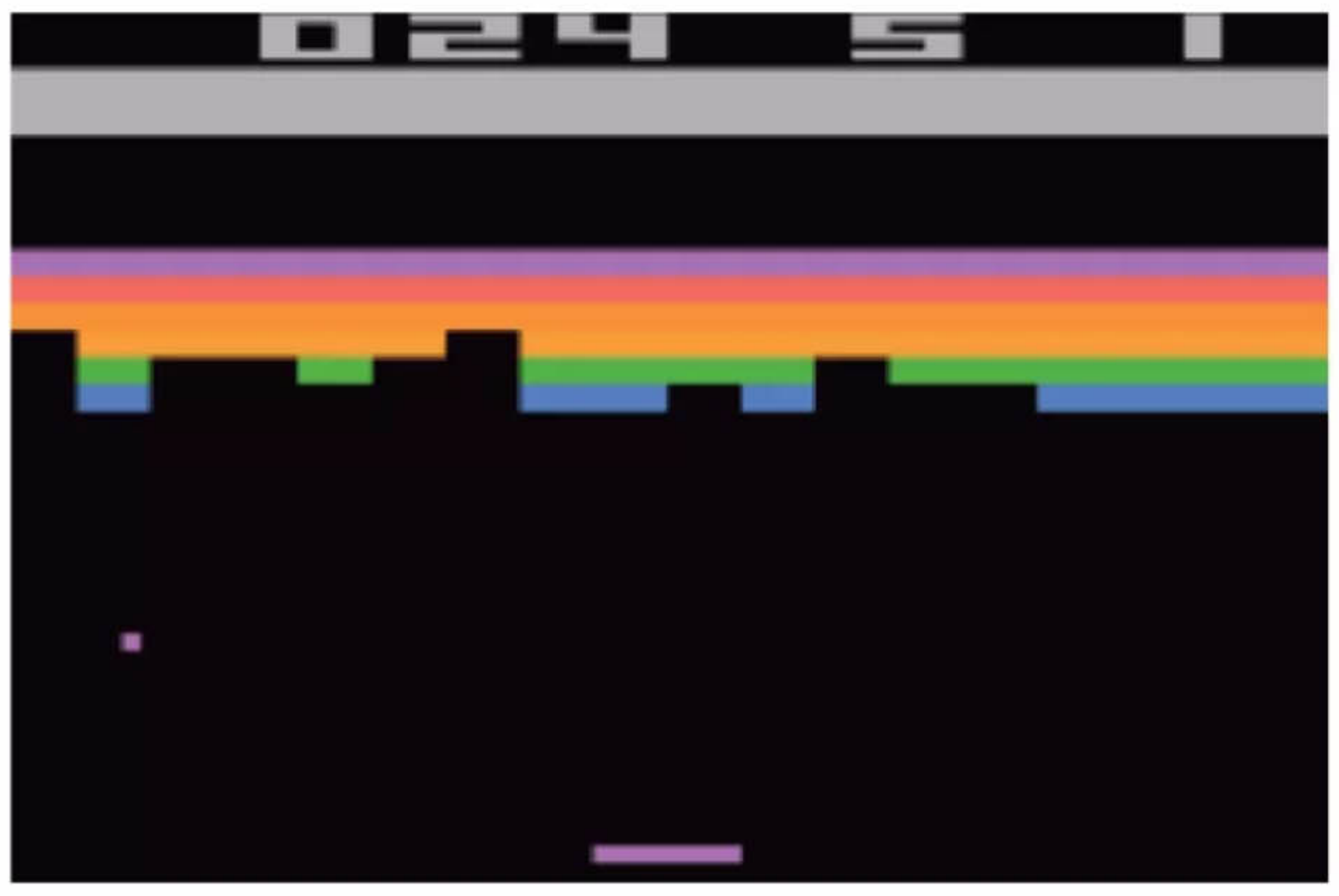

THE NEWEST 2 PLAYER
VIDEO SKILL GAME
PONG
from ATARI CORPORATION
SYZYGY ENGINEERED
The Team That Pioneered Video Technology
FEATURES
PONG

» Not just a game, *Pong* was a video skill game as this flyer claims.



» Everyone should play *Pong* when they get a chance. It's an incredibly important game that really did shape the industry when it was released by Atari Inc in 1972. A true timeless classic that still plays brilliantly today.





» Breakout was another early hit for Atari, and was another game based on a very simple, but easy-to-understand concept. It was created by Steve Wozniak who would go on to work at Apple.

Nolan tried to get *Pong* manufactured but he was repeatedly turned down. So he persuaded Andy Capp's, a local bar in Sunnyvale, California, to install a cabinet to see how well it would do.

Pong Story

After seven days, it had become jammed with quarters from eager punters. Nolan then mustered up the cash to create more machines and released *Pong* in 1972. It ended up shifting 8,000 machines, leaving Bushnell and Dabney staring at a profit of $3.2 million.

"I'm very proud of *Pong*," admits Bushnell. "At the time I thought it was going to be good but certainly not the commercial success it was."

Two years later, Nolan developed the game for the home market and his $99 *Pong* console was eventually taken on by the department store, Sears. People were prepared to queue for hours to get their hands on *Pong*, which went on to sell 150,000 machines, but this grabbed the attention of other companies which had begun to create their own consoles in order to emulate the success of Atari's machine.

In October 1976 Atari became a subsidiary of Warner Communnications. The company then created the Video Computer System (or Atari 2600), which was eventually released a year later in October 1977. A year later Bushnell left the company, sparking a reorganisation within Atari. Yet the company went on to release *Space Invaders* on the VCS – a game that was proving a hit in the arcades – and the console's fortunes seemed unstoppable. Just two short years later in 1978 Nolan was forced out of Atari, after it was dicovered that he was holding meetings without Warner staff knowing.

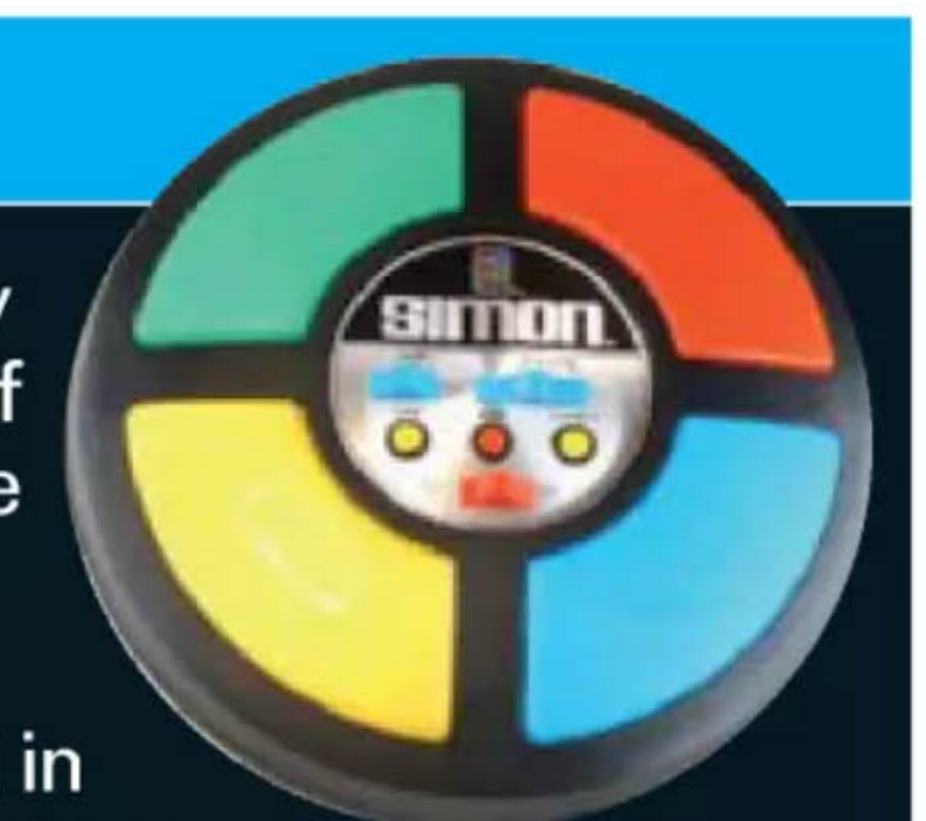
Today, having recently celebrated his 69th birthday, he is still involved in videogaming.

In the years since Atari, Nolan has been involved in umpteen different companies each with varying success, among them Chuck E Cheese's Pizza Time Theaters where children could eat and play games, Androbot Inc, which created personal, entertainment robots, and Sente Games.

Bushnell was then involved with uWink, a hi-tech restaurant franchise which is based around videogames. Each outlet is packed with monitors from a two-sided touchscreen on every table to flat panels in front of every bar seat. Although the screens will show music videos and film trailers, their main use will be for games, such as card and puzzle titles, among them a variation of Pipemania. "The videogame industry has currently been doing the same thing over and over again, with little innovation or out-of-the-box thinking," he tells us about the venture.

Fast forward to today and Nolan has once again found himself back at Atari SA (which was previously known as Infogrames Entertainment) as part of the company's new board of directors. He first returned to Atari in 2010 and has been involved in a number of projects, including a search for a new iOS version of *Pong*. It would appear that Nolan's career has come full circle since co-founding Atari Inc in 1972.

BUSHNELL SAYS

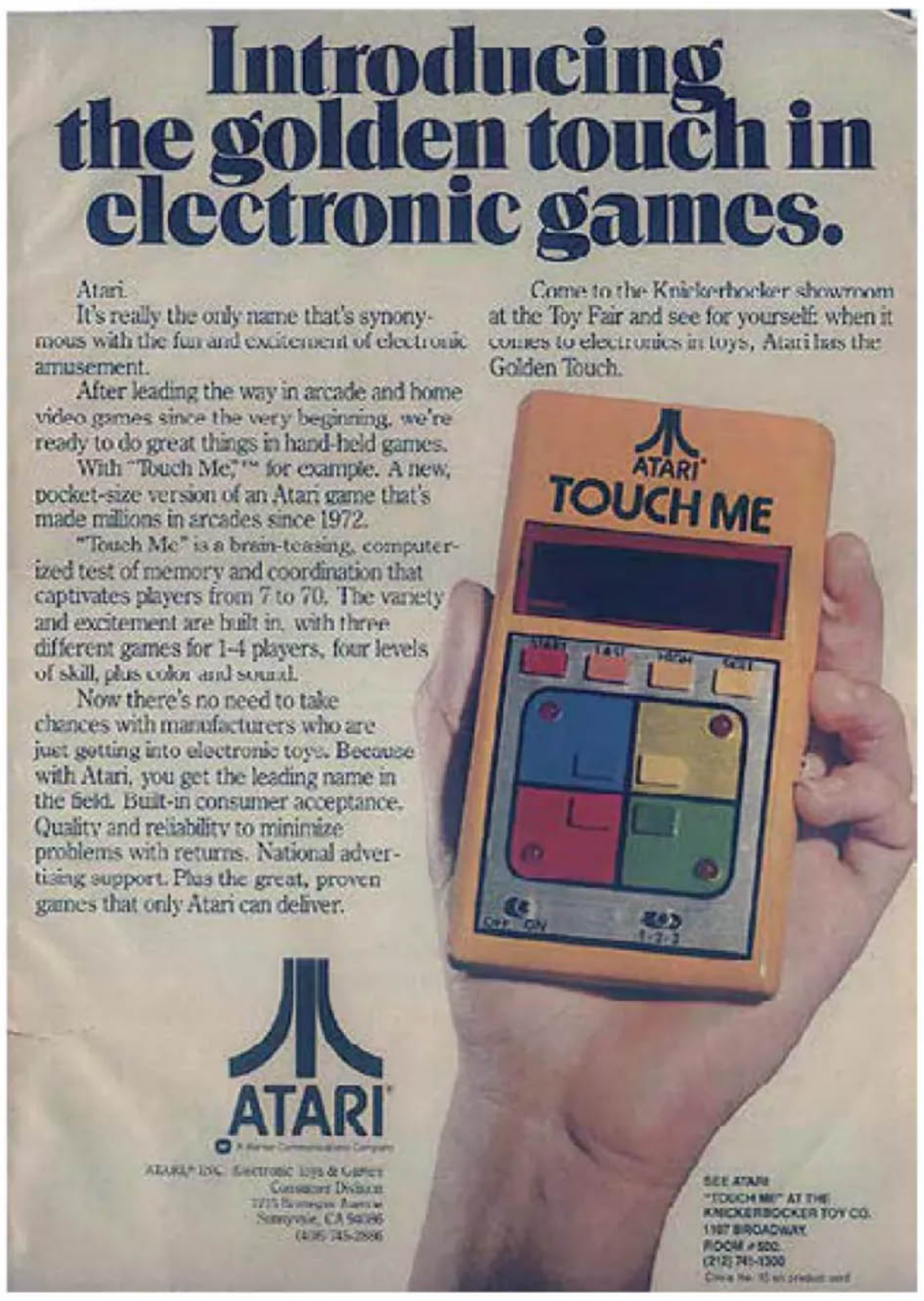


Despite being intrinsically linked with the creation of *Pong*, Bushnell's favourite Atari game is actually a game called *Touch Me*, an arcade game released in 1974 that was later created as a handheld device.

"It was one of the first electronic pattern-matching type games," Bushnell explains, describing the way players had to follow a pattern of lights and sounds and replicate them to get a high score. Most people remember it as *Simon*, a version created by MB Games.

"It continues to be knocked off, and it keeps everyone from a two-year-old to a 60-year-old entertained through its simple call and response memory play. Studies have shown that games are one of the best ways for people to learn and this shows how simple concepts can be successful and educational."

Following the *Touch Me* handheld, it was envisaged that *Breakout* and *Space Invaders* would also be created as portable devices but they unfortunately failed to make it to market.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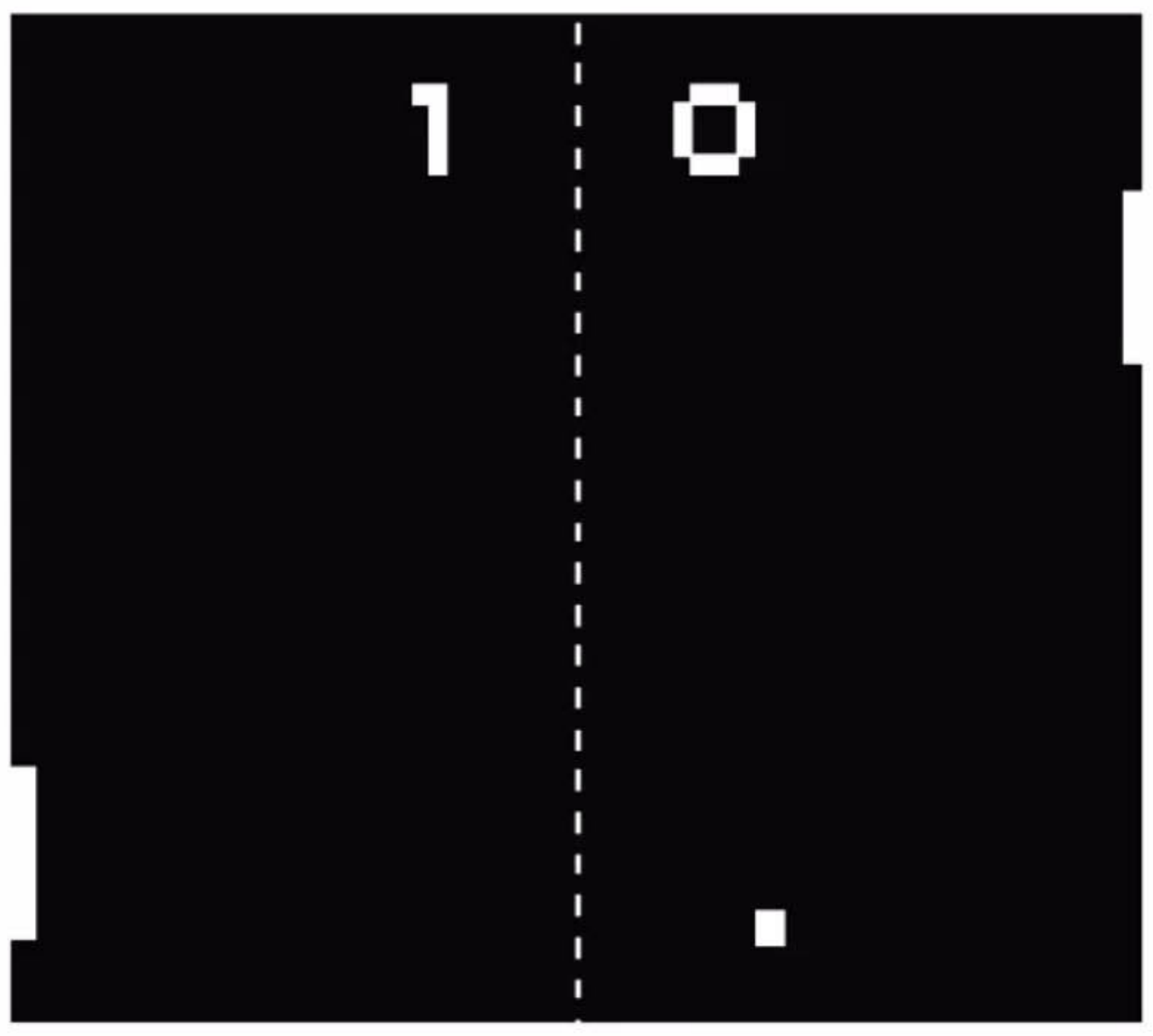
NOLAN BUSHNELL FEATURED GAMES

COMPUTER SPACE

ARCADE

1 Regarded as the first coin-op ever released, *Computer Space* was nonetheless a flop on its release. Even though the majority were impressed by the machine, it's difficult control methods were off-putting to many.

Nolan says: "This was my tribute to Steve Russell's *Spacewar* and it had modest success. Perhaps it was too complex."

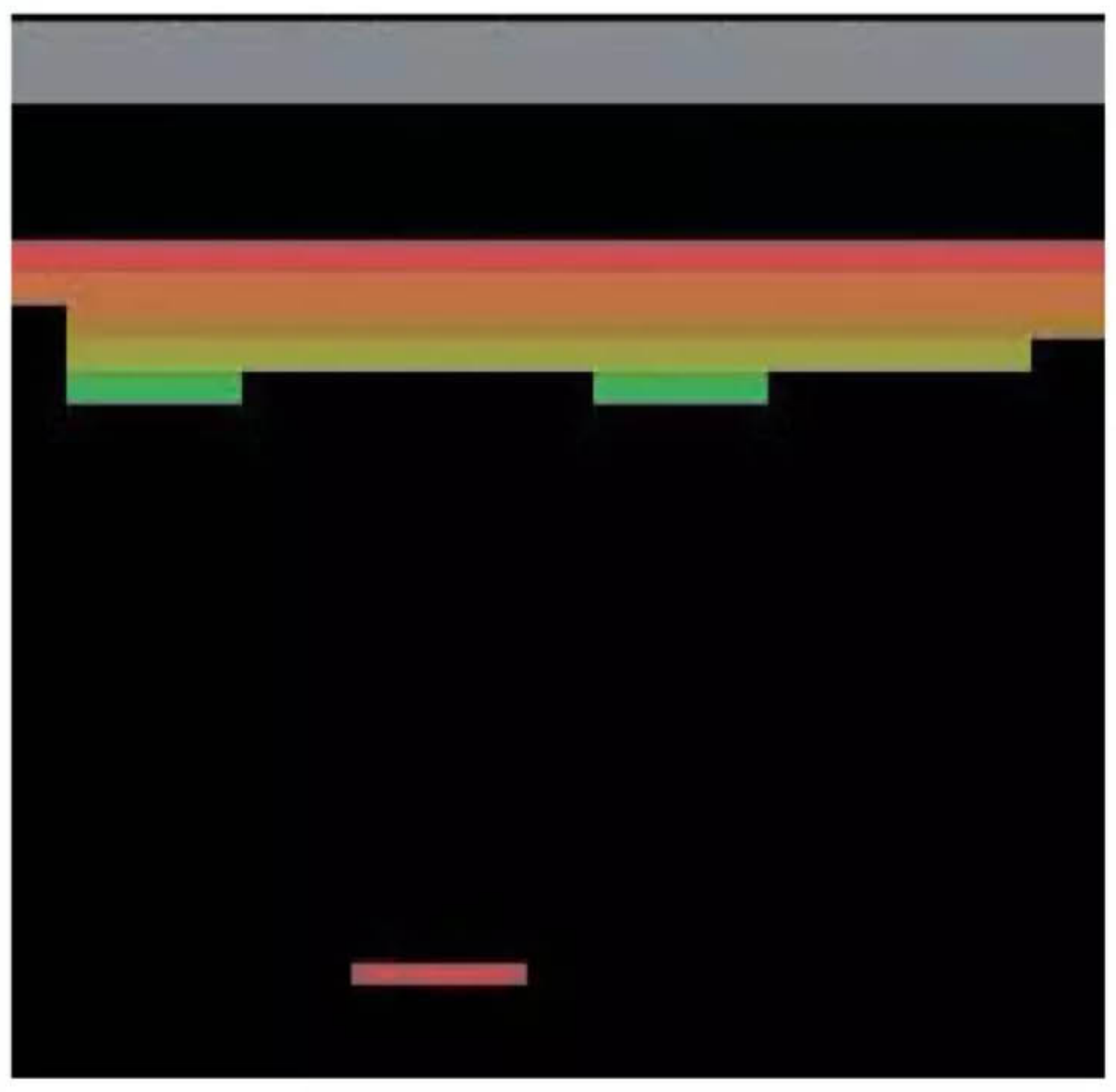


PONG

ARCADE

2 *Pong* was a game of skill that required quick reflexes and an alert mind.

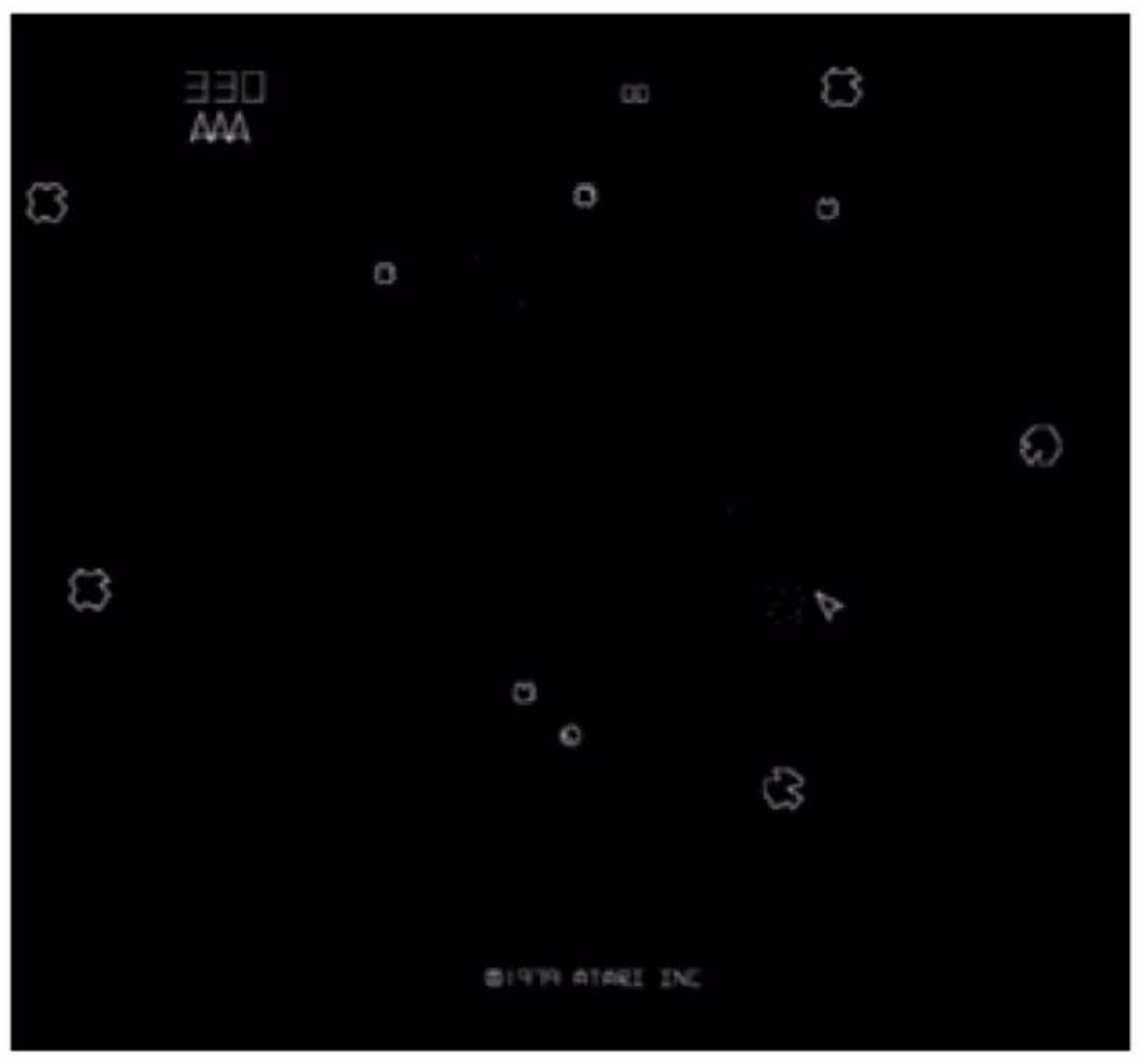
Nolan says: "I wanted the simplest game I could think of and so decided that something with a bat and ball would be perfect. Programming the game so that the ball would shoot off at angles helped it to be fun and the scoring element made it competitive"



BREAKOUT

ARCADE

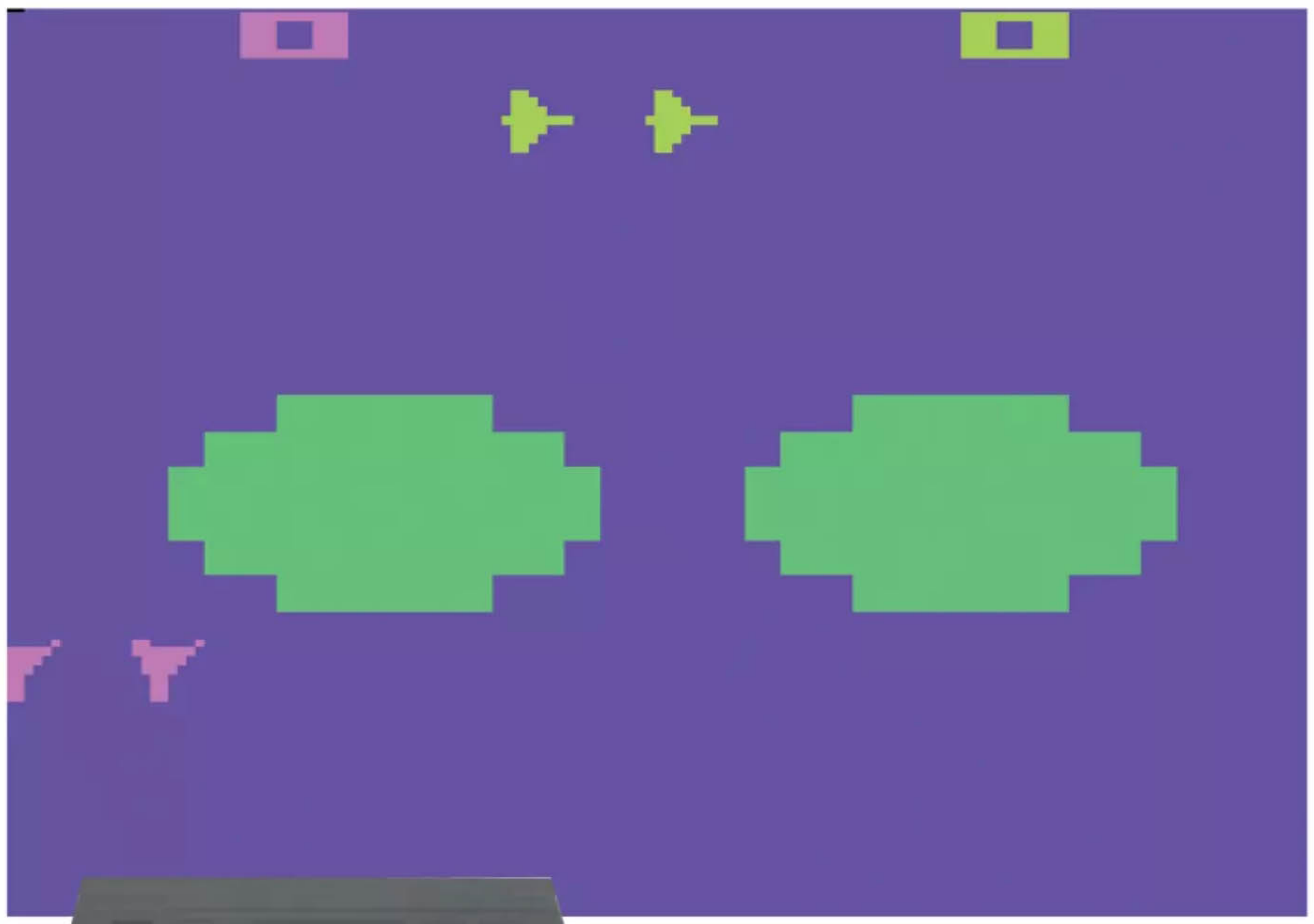
3 *Breakout* was Nolan Bushnell's third game. He designed the concept – basically a single-player *Pong* – and then asked a programmer called Steve Jobs to code it. Jobs set about programming the game with the help of Steve Wozniak. And Bushnell paid them $7,000 for the work (although just $350 was actually handed over to Wozniak).



ASTEROIDS

ARCADE

4 Contrary to popular belief Nolan wasn't involved with *Asteroids*, having already left Atari Inc, but we mention it, as he's a fan. "*Asteroids* was simple and yet thrilling." he tell us. "If you look at *Asteroids* and *Breakout*, they are both about cleaning up the environment, whether it's breaking up rocks or destroying bricks. These were good, solid games."



ATARI VCS

ATARI VCS

5 Also known as the Atari 2600, this was the classic home console which no home in the late 70s and early 80s could be without. With its woodgrain finish, this was a machine for the living room, not a toy for a child's bedroom.

Atari had already dabbled in consoles, producing machines capable of playing just one game. But now the firm – and Nolan – wanted to push things further and create a machine which would play many games.

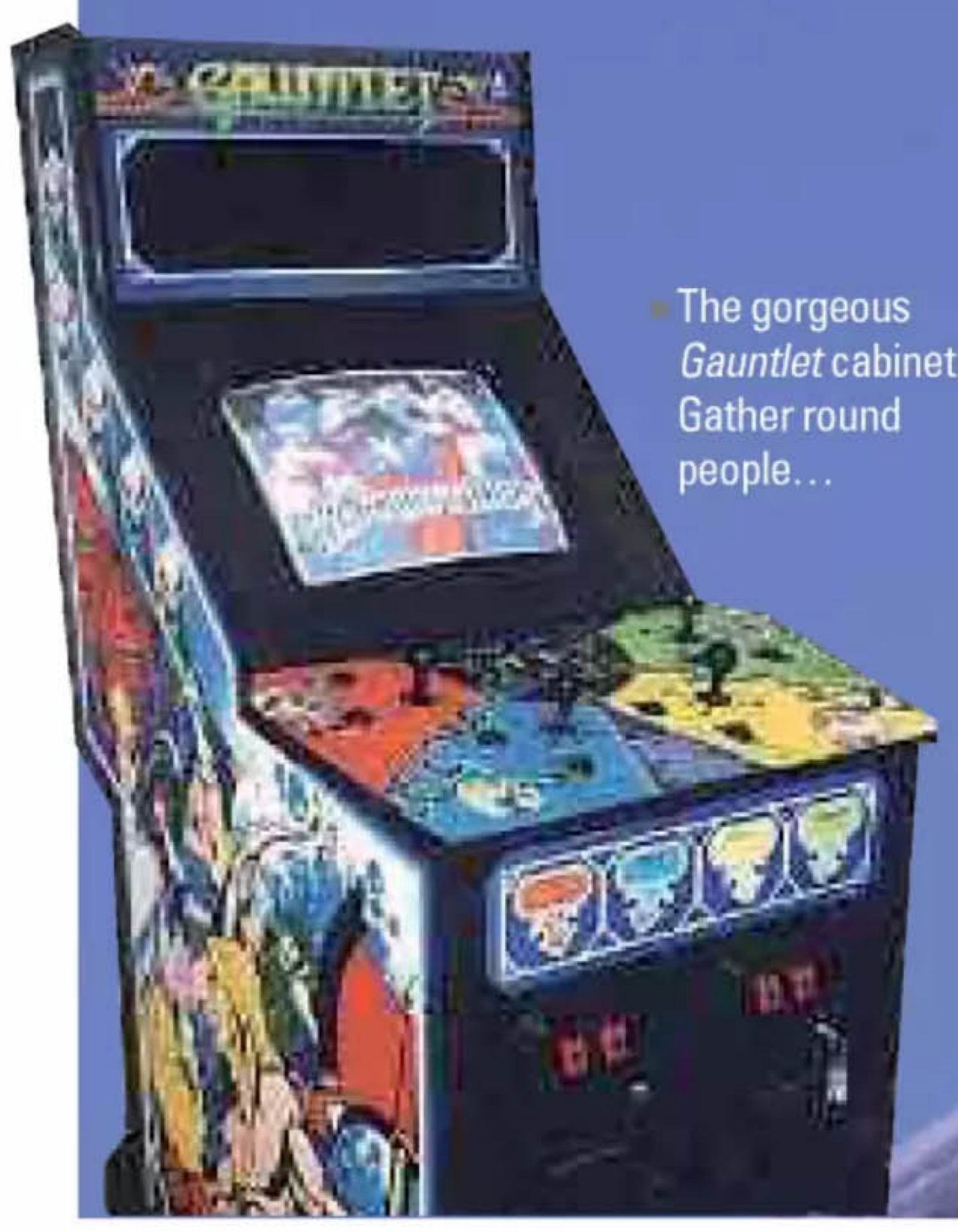
"We wanted something better than the single-game machines and so created a console which could be programmed to run many different games," says Bushnell. "Micro-processors had come down in price and made the project viable. We wanted the MOS Technology 6507 CPU which had only been created about three months earlier so it was cutting edge stuff.

"I still think this is a good console now and I'm so proud that it's still talked about today."

» Slow to take off but when it did it dominated for years to come, the Atari VCS was the first mainstream console

"THE VIDEO GAME INDUSTRY HAS CURRENTLY BEEN DOING THE SAME THING OVER AND OVER AGAIN, WITH LITTLE INNOVATION OR OUT-OF-THE-BOX THINKING"

NOLAN BUSHNELL



» The gorgeous *Gauntlet* cabinet. Gather round people…

ED LOGG

HE WAS THE GOLDEN BOY OF THE GOLDEN AGE, PRODUCING SUCH ARCADE CLASSICS AS ASTEROIDS, CENTIPEDE AND GAUNTLET. PAUL DRURY PLAYS CO-OP MODE WITH ED LOGG AS HE APPROACHES HIS THIRTIETH YEAR IN THE VIDEOGAMES BUSINESS.

DATAFILE

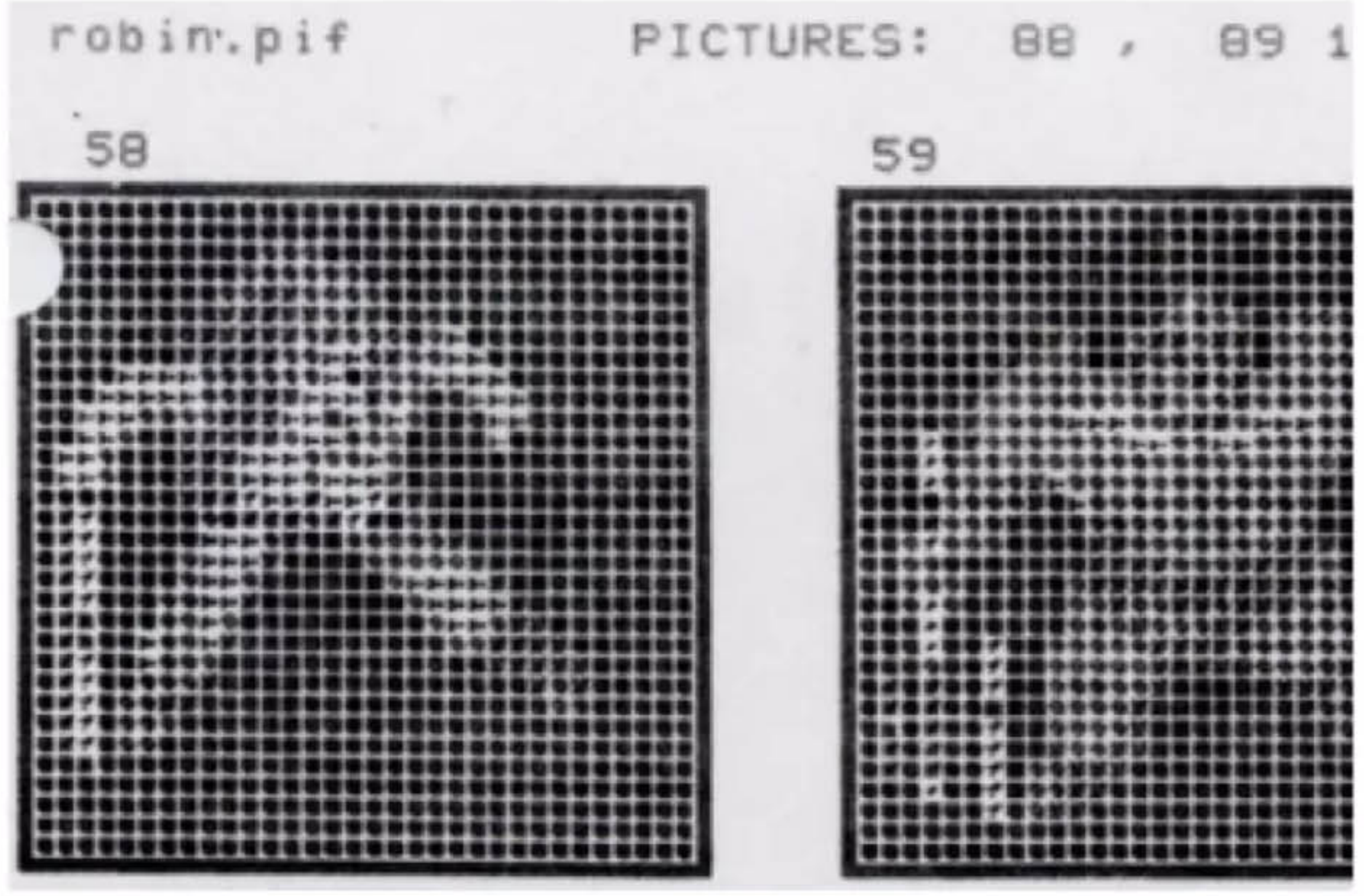
NAME: ED LOGG
DATE OF BIRTH: 11.9.1948
FIRST JOB: GRADING INSPECTOR
CURRENTLY: MY BUSINESS CARD SAYS: SUPER DUPER GAME GUY
FAVOURITE FILM: ANIMAL HOUSE

His games are the stuff of dreams. Literally, sometimes. Innumerable gamers have drifted into slumber with showers of asteroids floating across the black screen of their closed eyelids. It's a phenomenon that creator Ed Logg knows all about.

"Yeah, back then I'd be playing it in my sleep, shooting asteroids all night long" he recalls. "I'd go to bed thinking about a problem in the game and dream about it. Sometimes I'd wake up with the answer. Other times I'd have some really stupid ideas…" Of course, the skill is recognising the difference between the two and judging by his superlative back catalogue amassed over three decades, Ed made some shrewd decisions. The first and most crucial being that despite two years of Graduate school at Stanford studying Mathematics, a career in teaching was not for him.

"I just liked programming more, so I left and joined Control Data Corp. They did the CD 6000 Cyber series – the best computers around at the time, man."

Officially, he was to work on the Union Bank of Switzerland project. Unofficially, a games enthusiast had found a canvas. Ed had already tinkered with solving chess problems and simulating slot machines on 1400 series computers in the mid-Sixties and had played

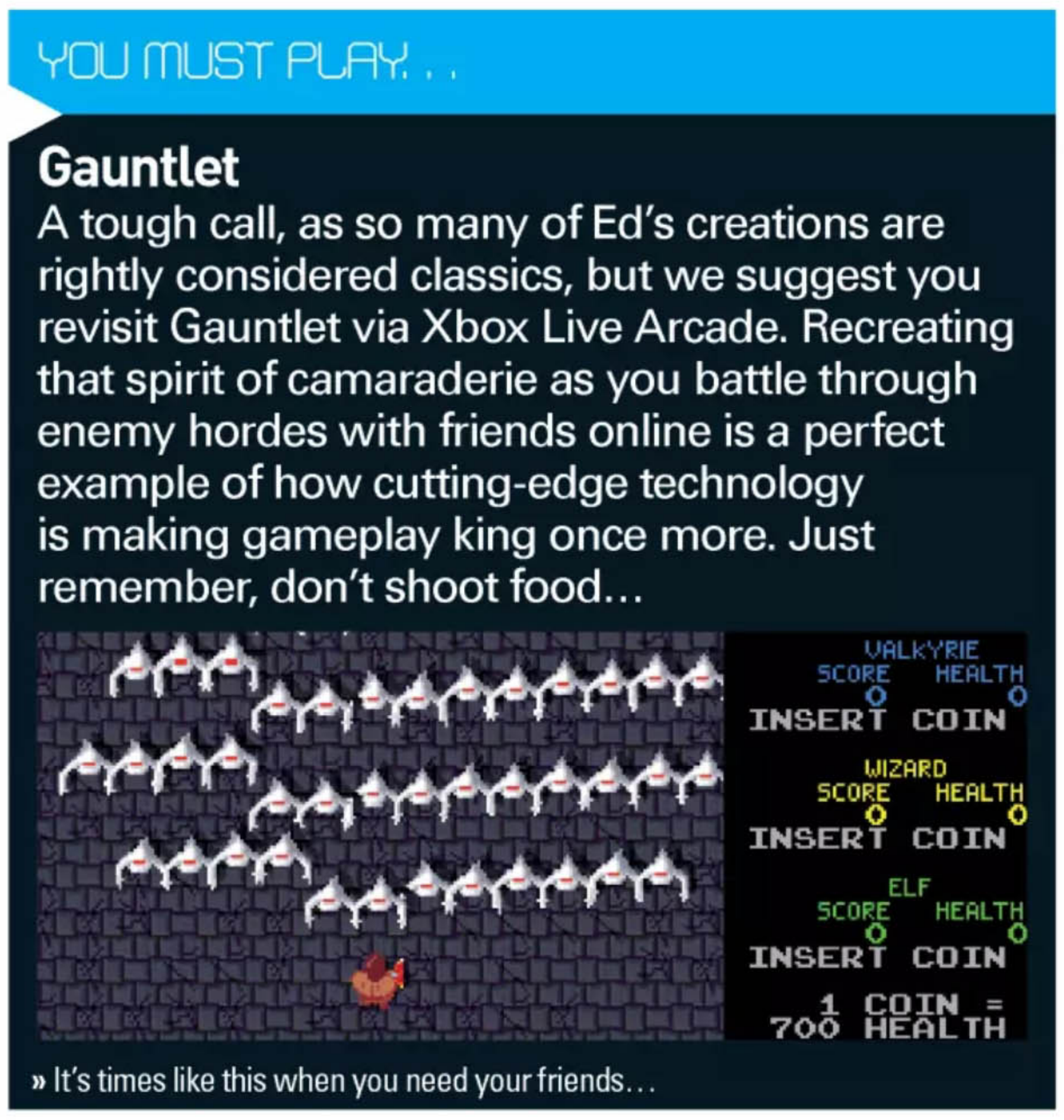


» An image from the original *Gauntlet* proposal in January 1984

YOU MUST PLAY…

Gauntlet

A tough call, as so many of Ed's creations are rightly considered classics, but we suggest you revisit Gauntlet via Xbox Live Arcade. Recreating that spirit of camaraderie as you battle through enemy hordes with friends online is a perfect example of how cutting-edge technology is making gameplay king once more. Just remember, don't shoot food…



» It's times like this when you need your friends…

arguably the first coin-op ever – a pair of PDPs hooked up in the Stanford Student Coffee forum playing Space War – at the start of the Seventies. Now, his interest and talent saw him sneakily converting the FORTRAN code of the original Adventure and Star Trek to run on IBM machines and distributing his creations over Arpanet, the precursor to today's wonderful web.

"I guess that was technically illegal, as they were government computers and you weren't supposed to do recreational stuff," Ed admits. "Was I subversive? Oh no, I was doing it for the love of the games, man…"

First experiences

Spreading the love was soon to become a full-time occupation. A former co-worker who had moved to Atari urged Ed to follow suit, enthusing about how the company actually paid you to write games. Ed impressed at interview by describing how he'd built his own computer and produced a version of Sea Wolf on it and thus in 1978 he became part of the coin-op division. Ed took over a project begun by Dennis Koble, who had just moved into the fledgling consumer division, entitled Dirt Bike. He completed this reworking of driving game Sprint, the steering wheel now replaced by sturdy handlebars, but the title never made it into full production. However, resourceful Ed was pioneering the concept of multi-tasking long before the term had become common industry parlance.

"Back then, you wrote stuff down on a computer printout and gave it to some gals and they entered in the code. It was in Assembly language and credit to gals like Linda and Cindy, who would point out if you'd done an LD statement when it should have been LDA. Linda in particular was notorious for adding snotty little comments on your code. Real cute. Anyway, they only had one PDP machine back then and it took about an hour to compile before you'd get some paper tape back. In that time, I could work on something else. I'd been talking with Owen Rubin over lunch about some ideas we had to extend Breakout and so I could daisy chain Super Breakout with Dirt Bike, doing an hour on each…"

Ed came up with six new flavours for the popular Breakout, the most compelling being 'Progressive' mode, which introduced an Invaders-style onslaught as the walls of bricks descended towards your humble bat. Other ideas, such as coloured bricks that required multiple strikes to destroy, would have to wait until technology caught up.

"You know Arkanoid?" enthuses Ed. "I can see a lot of our ideas in that. But we didn't even have colour! It was just an overlay on the screen."

BOOK OF DREAMS

Atari's famous brainstorming sessions were conducted over several days in Californian locations such as Boulder Creek and Napa. Ed describes the creative process:

"We'd submit ideas beforehand, discuss them in groups and then propose the best ideas. There'd be this book produced every year with all of these ideas in…"

Sadly, Ed hasn't kept hold of any of these imaginative tomes. Does this mean hundreds of winning game designs have been lost?

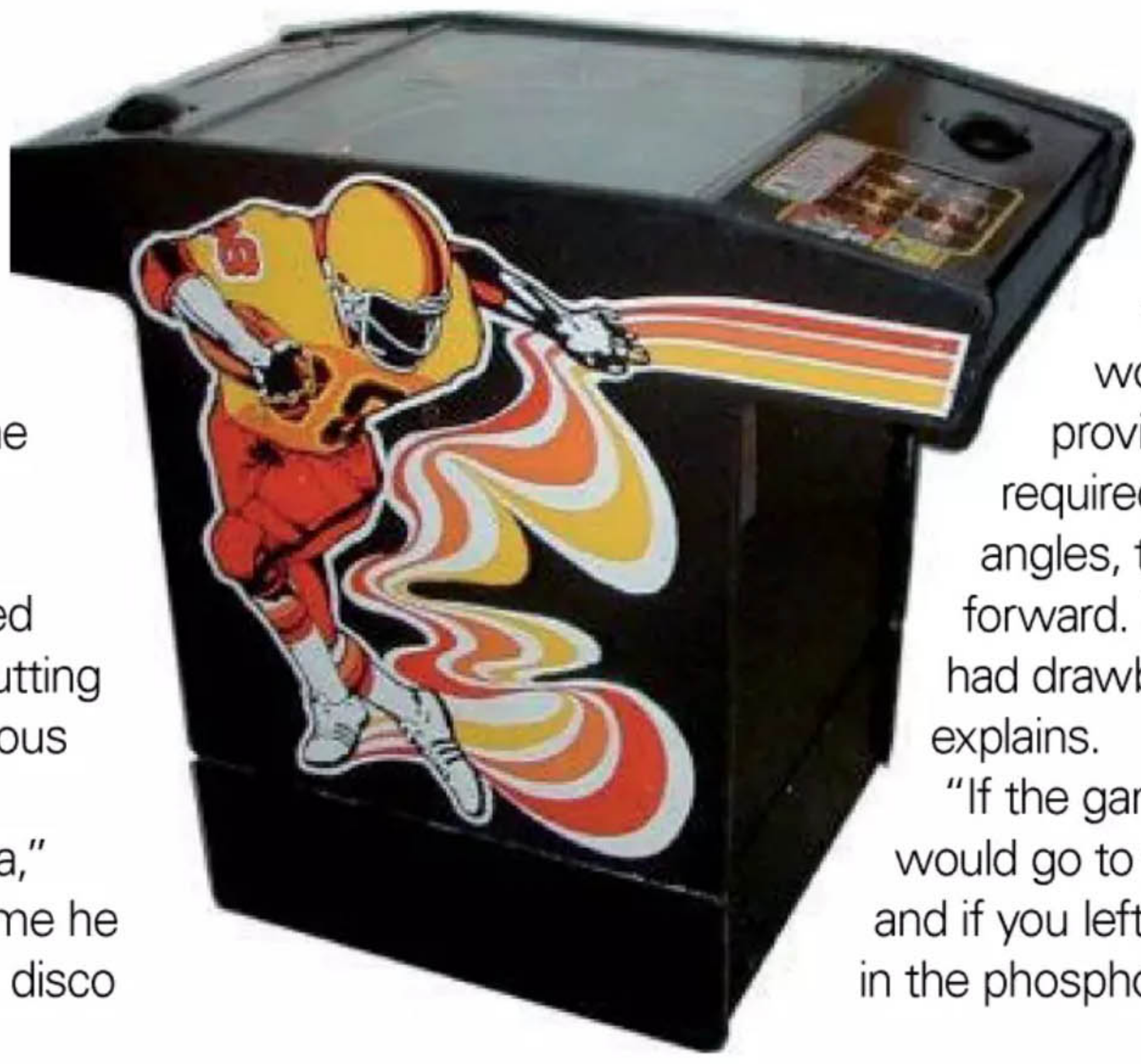
"Actually, there were very few ideas that were any good," Ed advises me. "Design by committee never really works. You end up going in all directions. I don't want to sound smug, but there are very few people in the industry capable of coming up with a good idea, something with a real hook to it, and then have the wherewithall to bring together all the pieces."

We agree – but if anyone out there does still have a copy of one of these Atari game concept compilations, Retro Gamer would love to see it…

"BACK THEN I'D BE PLAYING MY GAMES IN MY SLEEP, SHOOTING ASTEROIDS ALL NIGHT LONG" ED LOGG

Overlays

Ah, the joy of overlays. The creative use of sticky plastic to hide the graphical limitations of the day helped augment, Video Pinball, Ed's next project. Having spent much time coding physics to replicate a ball bouncing against the different surfaces of a pintable and even including a 'nudge' feature on the control panel to simulate the physical thump wizards would administer in tight spots, the whole thing was to be projected over a backdrop of hipsters strutting their stuff in the city. An ingenious idea, indeed.



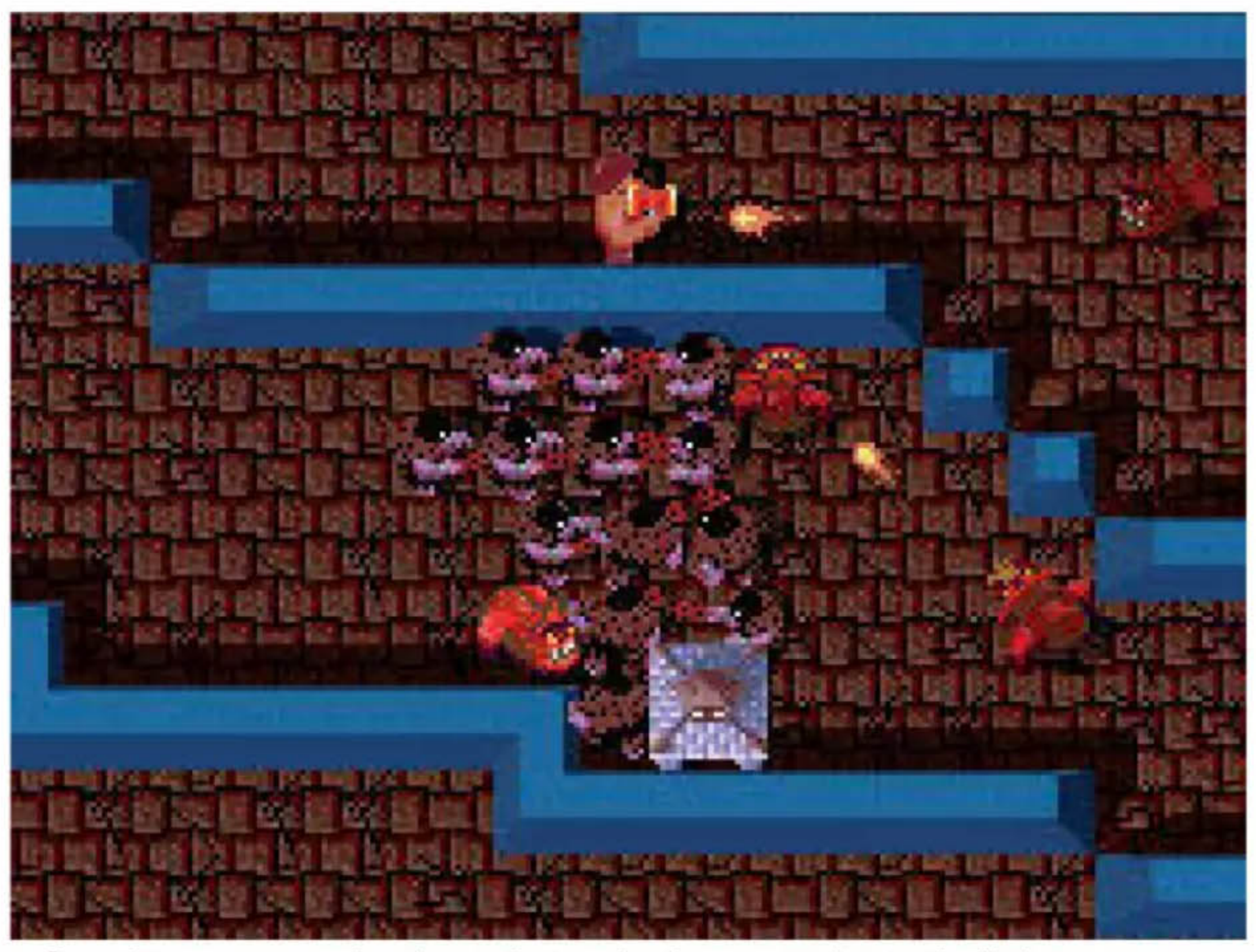
"I thought it was a stupid idea," grumbles Ed, swiftly assuring me he isn't the flared-trouser wearing disco dancer 'getting down' on screen. "But it did better than I thought. For once, my first impression was wrong…"

Ed undeniably had an eye for what might work and what is beyond resuscitation. It was a talent that led to his greatest success in his entire career. "I talked to Lyle Rains about an idea he'd got based on a game called Cosmos. I remember playing that a year before in John Ray's area and I'd thought it was daft – you were just flying around this big asteroid in the middle and it didn't really do anything. But I'd noticed people kept shooting at it and Lyle suggested if they could blow that planet thing up, that might be fun…"

The rocks were rolling. Drawing ideas from his old love of Space War and realising that the recently developed vector technology he'd worked on for Lunar Lander provided the high definition required for the numerous firing angles, the Asteroids project thrust forward. Using new technology had drawbacks, nonetheless, as Ed explains.

"If the game crashed, the beam would go to the middle of the screen and if you left it on, it would burn a hole in the phosphor. Oh yeah, that happened!

» Dr Muto. Remind you of anyone?



» *Gauntlet* was a superb coin-op that pushed co-operation to the limit - at least until you decided to grab all the gold and food…

So we put a 'spot killer' on the board, so if there wasn't enough deflection on the XY raster it would shut down. Remember the copyright message at the bottom of the screen? That was added to give it enough deflection to keep the spot killer off. But no one told me what the minimum deflection time was! I found out later that I should have given it more. On some machines, if you got down to like one asteroid and one ship, the screen would start to fade out. That was the spot killer circuitry coming in…"

It was a situation that happened more than Ed had anticipated. He had added enemy spaceships to keep players on their toes and had briefly considered whether it might be possible to leave a single rock floating gently across the screen and concentrate solely on destroying the high point value UFOs. He concluded that the strategy which became known as 'lurking' was impossible – and it would have been, but for a very late change to his code…

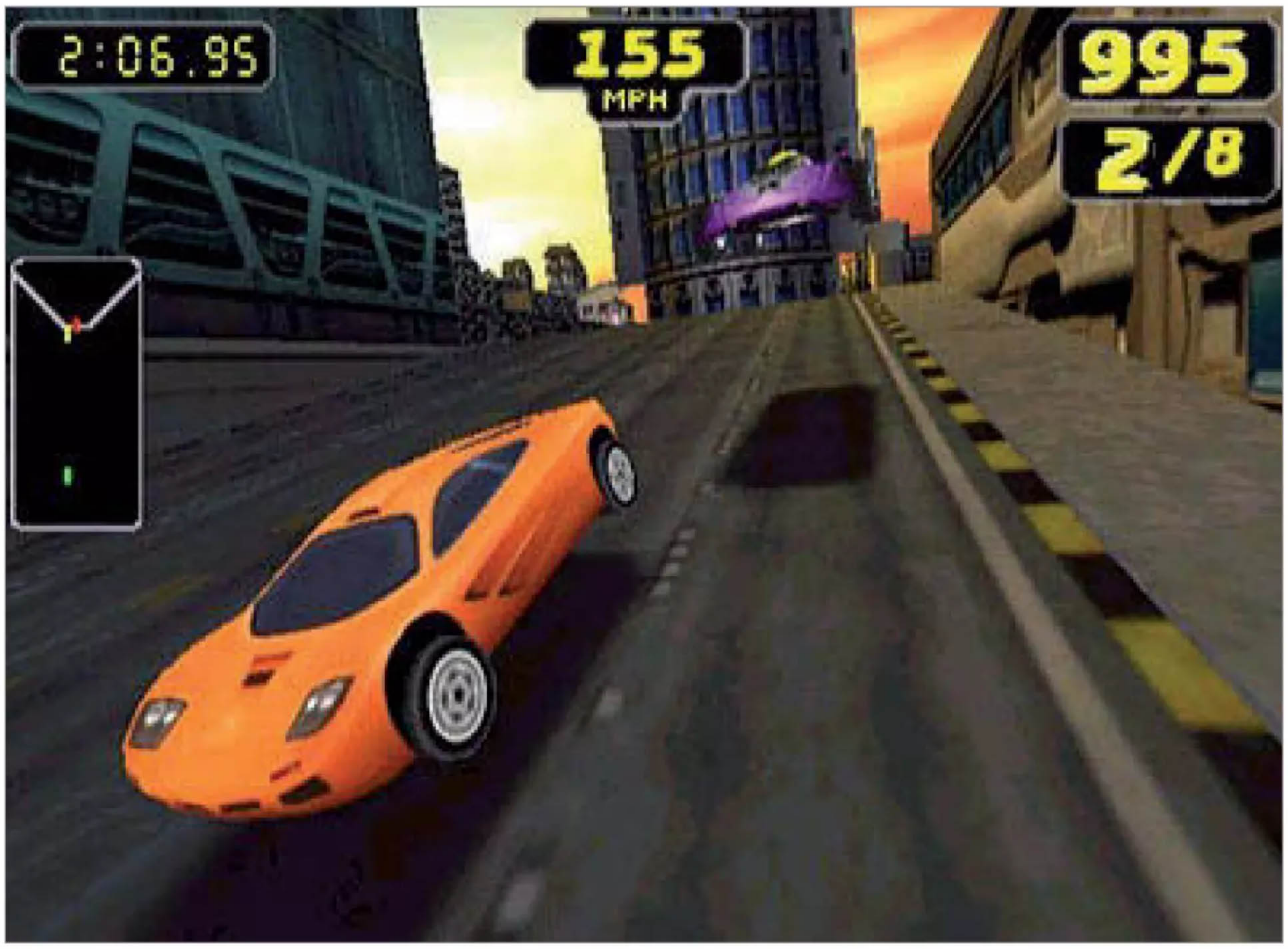
"Originally, the nasty little UFO would fire every second, but if you shot it at say ¾ of a second into the cycle, the next one would fire ¼ second after it came on screen. That meant a lot of time where it would nail you straight away and someone said it wasn't fair. I agreed and so the timer resets each time. What I should have done is as your score increased, that timer would decrease to nothing at say 60K. That would have killed lurking. But you know in retrospect that might have hurt Asteroids long-term sales."

Such a little decision, yet such a crucial one. Expert Asteroids players could dominate the machine for days (see RG 28's High Score column for how long) and thus it played host to the marathon gaming heroics that epitomised those early arcade days, securing its place as Atari's most successful coin-op. It was a triumph not to be repeated by the sequel, the brutally difficult Asteroids Deluxe, but then Ed had no involvement in the project. Didn't it feel strange to hand over your baby to someone else?

"It wasn't my baby!" Ed exclaims. "That became blatantly obvious when they started doing consumer

"CENTIPEDE WAS SUPPOSED TO BE PSYCHEDELIC… NO, I PROMISE THOSE MUSHROOMS AREN'T HALLUCINOGENIC, MAN"

ED LOGG



» *San Francisco Rush 2049* for Dreamcast – one of numerous home conversions Ed worked on

ONCE UPON ATARI

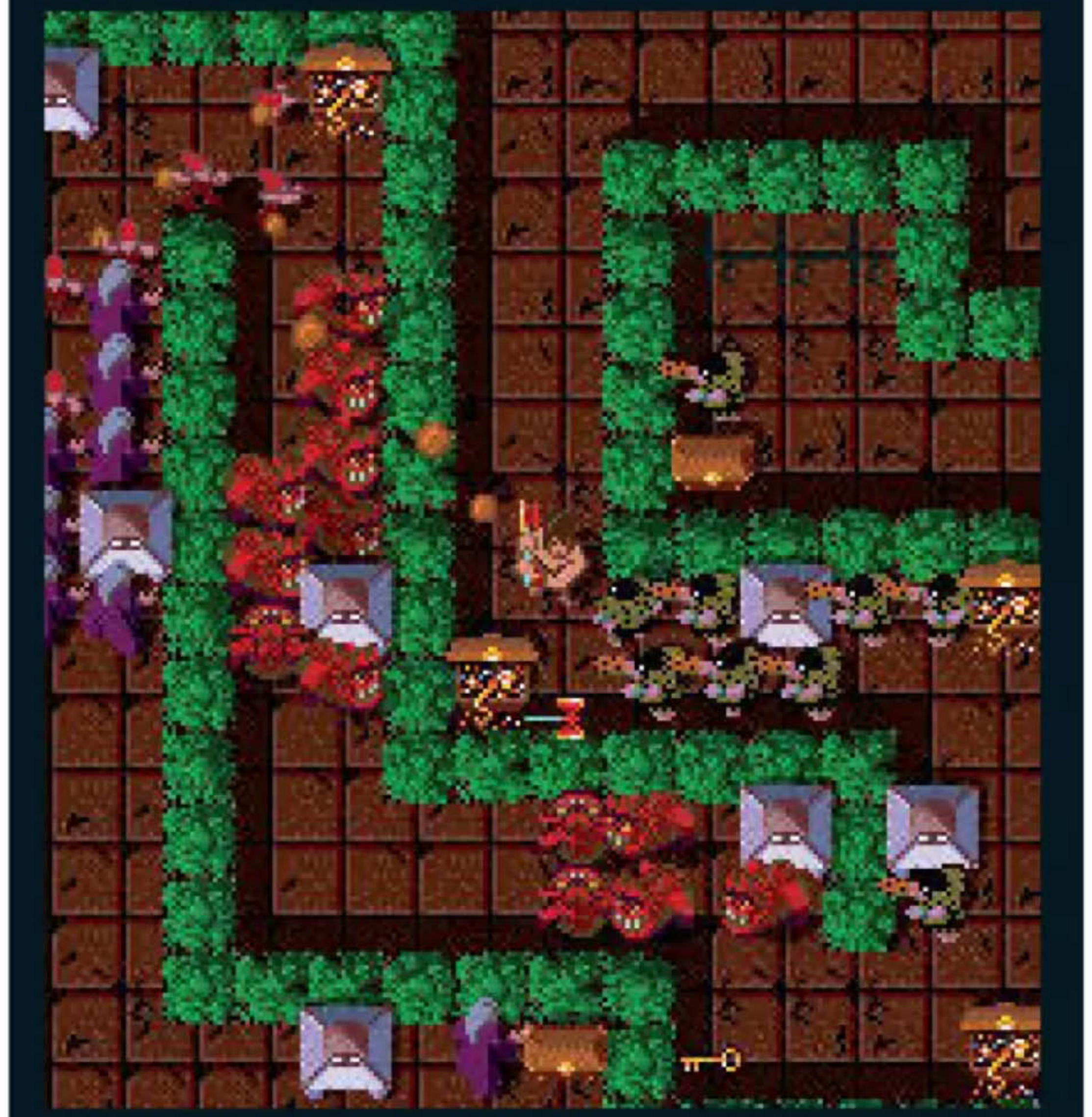
A testament to how ground breaking Ed's four-player opus Gauntlet was, the game had five patents taken out to protect the various innovations it introduced.

'Four of those had my name on them,' says Ed. 'The company owned everything and they're supposed to pay you a reasonable fee for the rights, but they made you sign it all over for $1. I actually had the nerve to ask the lawyer for my dollar. He pulled one out of his pocket and threw it in my face and said, 'This is the last one you're ever getting!' I framed it, with that quote.'

So, if the essence of success in Gauntlet is putting together the perfect squad of game developers and other experts, we decided to ask Ed which fellow industry folk he would like to join him to form the ultimate four-player coding team.

'I'd grab Eugene Jarvis, as he still has lots of great ideas; Bob Flanagan, who worked with me on so many different games and got so much done… and on time; and I'd have Dave Sheppard to do all the tools necessary to implement it all.'

A team of wizards, indeed.



» Gauntlet 2 featured a six-digit code and a secret room… did you win one of the 500 T-shirts?

versions and they never consulted me. I played 'em and I personally thought they sucked – they just didn't obey any of the rules."

The blasé attitude of management and the growing tension between the coin-op and consumer divisions at Atari not withstanding (see boxout), the company did at least recognise Ed's contribution to their success and promoted him to supervisor. It was a role he detested. "I didn't like the hiring and firing and all the people issues. The bottom line was, I wasn't doing games, so I quit after a year and a half."

What Ed took away from his time supervising the conversion of Atari's Football coin-op to support four players, aside from the realisation management wasn't for him, was key to his next project. He saw the potential of the trackball controller and of, Donna Bailey, a new employee he'd recruited. He brought them together for Bug Hunter, a game idea that had come out of one of Atari's off-site brainstorming sessions (see boxout Book Of Dreams).

Match made in heaven

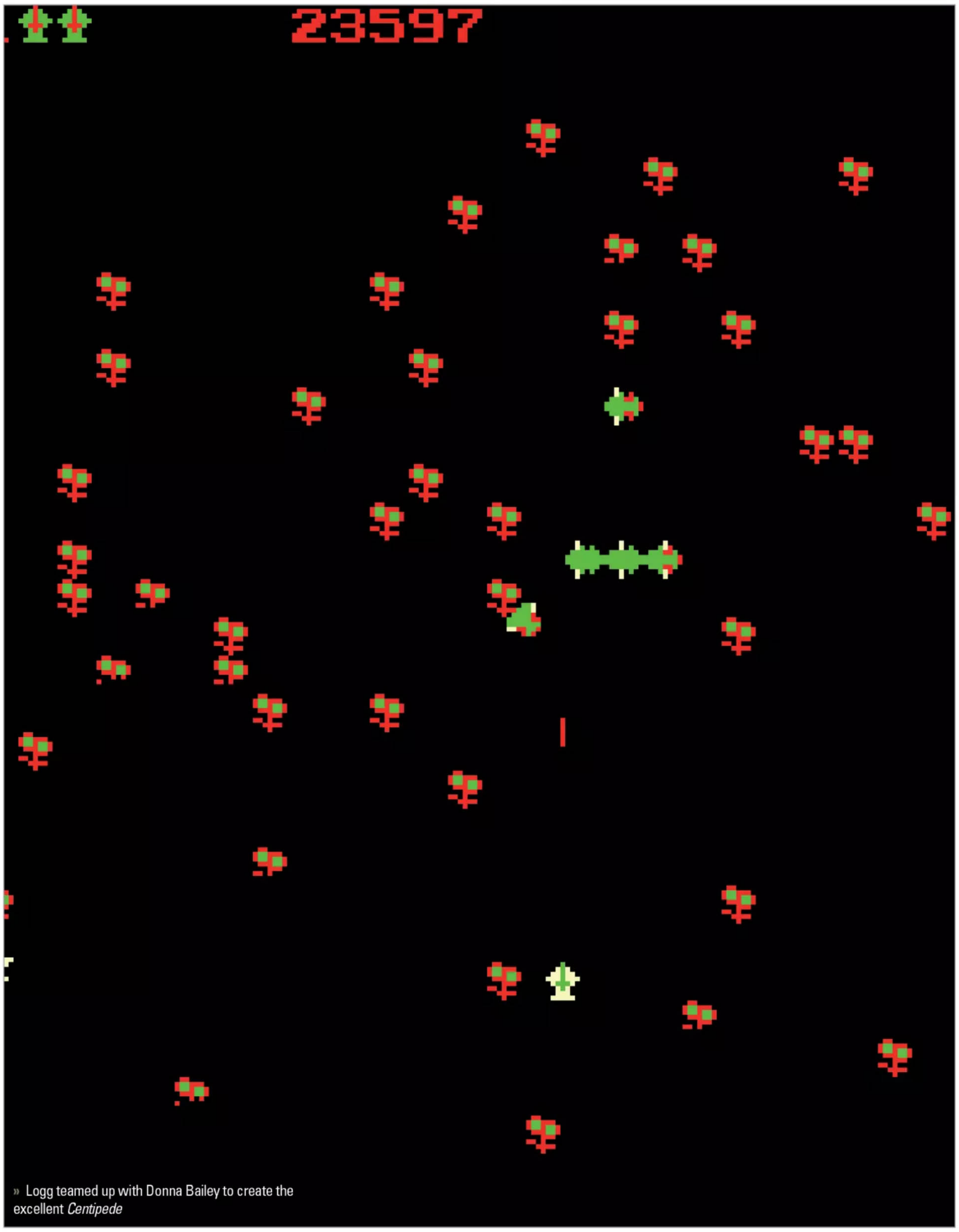
It turned out to be an excellent match. With Ed handling much of the initial design and Donna bringing some fresh coding fingers to her first project, the resulting Centipede almost surpassed Asteroids in terms of sales and critical acclaim. It proved especially popular amongst female players, drawing many women into arcades for the first time. Was this perhaps due to Donna's feminine touch and those beguiling pastel shades that burst from the playfield?

"Maybe," muses Ed. "But then you've got to realise the choice of colours we had back then wasn't particularly large! And it was supposed to be psychedelic… No, really, I promise those mushrooms aren't hallucinogenic."

This time, Ed elected to produce the sequel himself and, in 1982, Millipede graced the arcades with more frenetic insect action. "I wanted to fix some things I hadn't done in the first one – some nuances to give the expert players a new thrill. They could start at a higher level and there could be up to eight spiders out there at once. Plus it got them off the machine quicker…" It was another huge hit and Atari's coin-op division seemed invincible. Ed did dip his toe briefly into developing for the VCS when he produced Othello in 1979 after he asked Carol Shaw, who'd programmed Checkers, if he could see her kernel. Ed assures us this is not a euphemism – he gratefully used her code as the basis for the board game. Yet his heart stubbornly remained in the arcades, which proved fortuitous when the Tramiels bought out Atari and wielded a bloody axe to the consumer division, and yet left Atari Coin-op relatively unscathed, luckily.

"Hell, the Tramiels could have killed us there and then, but Time Warner owed money to Namco and ended up offering our division to them. They said sure."

So Ed and the team continued their groundbreaking work under Japanese direction. He embraced new technology with his laser disc game Road Runner, but when field tests failed to prove its appeal, marketing

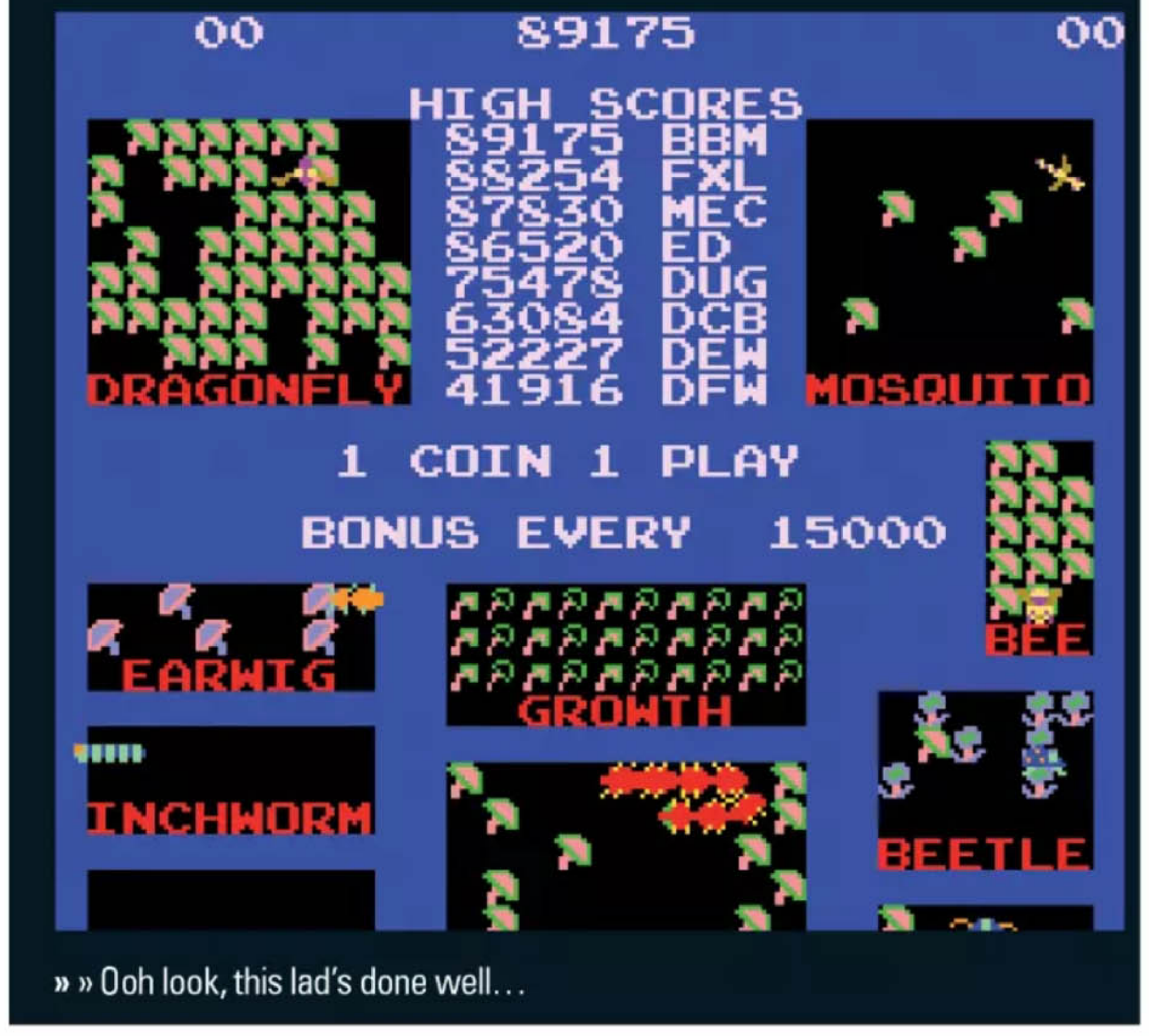


» Logg teamed up with Donna Bailey to create the excellent *Centipede*

HIGH SCORE

Asteroids is often credited with introducing the High Score Table to videogames, but Ed modestly points out he actually took the idea from the old Exidy title, Star Fire.

"I thought, yeah, I can do that. We didn't have battery backup, but I could keep ten scores stored while the machine was powered up. By Centipede, we'd got battery backup to keep scores in memory – it was like a programmable Eprom, like you get with cameras nowadays." Ed is equally modest when we remind him that his name sits aloft the default high score table in the painfully difficult 'real flight mode' of Steel Talons. "We'd put a lot of help into the game, like stabilising your helicopter to keep it flying level, and we thought it would be good to have an option to turn all that off. You could do better in that mode if you could handle it. No, I wasn't an expert, I just put myself at the top of the high scores. Just a little vanity, okay!"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       HIGH SCORES
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       86520 ED
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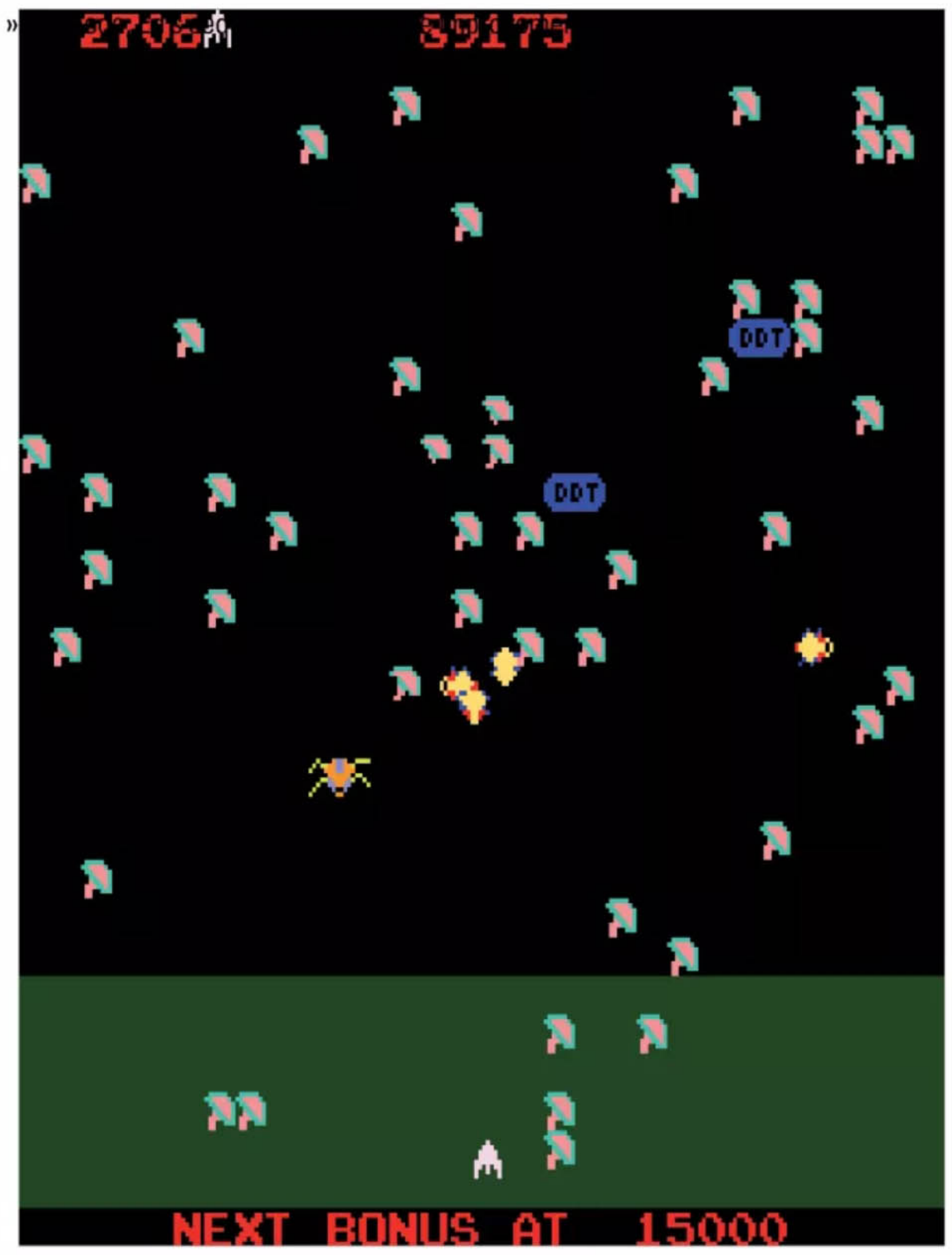
» » Ooh look, this lad's done well…



bombarded him with various suggestions of how to make it better.

"It's one of Ed Logg's Laws," he states in learned tones. "What you get from the first test is pretty much what you're gonna get. If something sucks, no slight change is going make a difference. They wanted me to convert it to a different board, but I told them to get someone else. And anyway, I had this other idea I really wanted to work on…"

Gauntlet proved to be a mighty good idea. Having discussed with engineer Pat McCarthy the need to be able to change motion objects on the fly, the resulting four-layer board, double the size of anything Atari had done previously, allowed a behemoth of a game. Drawing inspiration from Dungeons & Dragons and a little known computer game called Dandy, Ed and his team created the definitive multi-player arcade adventure. Technologically impressive (see boxout Running The Gauntlet), it brought players together in an epic quest, but Ed wasn't above sowing a little dissension in the ranks.

Poking wizard

"We got a professional in to do the speech, like a dungeon master telling you when you'd screwed up. I kind of liked when it would say, Wizard is eating most of the food, to poke the other players into thinking 'hey, are we gonna let him get away with that!' It was co-operative up to the point when you needed something or wanted something."

Gauntlet 2 followed in 1986, expanding the game and allowing players to choose the same character as their comrades. Ed was already working on a third instalment, Catacombs, which would take the quest into the third dimension, when management decreed they'd had enough of Gauntlet and Ed was forced to change the theme dramatically. Released in 1987, Xybots was certainly ambitious, mimicking Doom's corridor based combat with ingenious use of stamp hardware, but the innovative controls proved hard for players to adapt.

"Maybe we couldn't educate players to the new controls and a first-person perspective can be a problem," concedes Ed. "I wish I'd stuck to my guns and kept it as Catacombs."

He wasn't to be discouraged from developing in 3D, mind. Helicopter flight sim Steel Talons saw him team up with old buddy Ed 'Battlezone' Rotberg, a talented but sometimes fiery fellow. "Ed's got a real hot temper, which kind of makes me uneasy. It never came to blows, but there was a little yelling and screaming."

Ed assures us this had nothing to do with him being married to a former girlfriend of Mr Rotberg ("split up long before and he even introduced me to her at a party!") and besides, the screaming was not confined to those developing the game. "I wanted players to feel they'd been shot, so we put a pinball thumper under the seat. I didn't realise the engineer had put more current through it than planned and man, it was like someone was hitting the seat with a hammer."

And so Ed left the arcade industry with a bang. The Nineties saw him move into the consumer division, converting the San Francisco Rush driving series for N64 and later for the Dreamcast. It was something Ed wasn't unaccustomed to. Since the mid-Eighties, he'd been producing NES games, including conversions of Centipede, Millipede and a superlative version of Tetris which he'd written from scratch. The game had ended up having to be withdrawn amidst legal wranglings with Nintendo. "Some of the guys at Tengen had reversed engineered the lockout chip on the NES. I was nothing to do with it… but I knew the games Nintendo were playing and didn't like it either." The new millennium saw Ed head up the programmers that produced *Dr Muto* for PlayStation 2 in 2002, which starred an ageing mad scientist conducting bizarre experiments. Any relation, Ed?

"No," he responds adamantly, before adding after a lengthy pause, "Okay, perhaps there's a bit of me in him. Maybe he's who I'd like to be. But by then, making a game took so long and you needed a huge team. It just wasn't as exciting to me anymore…"

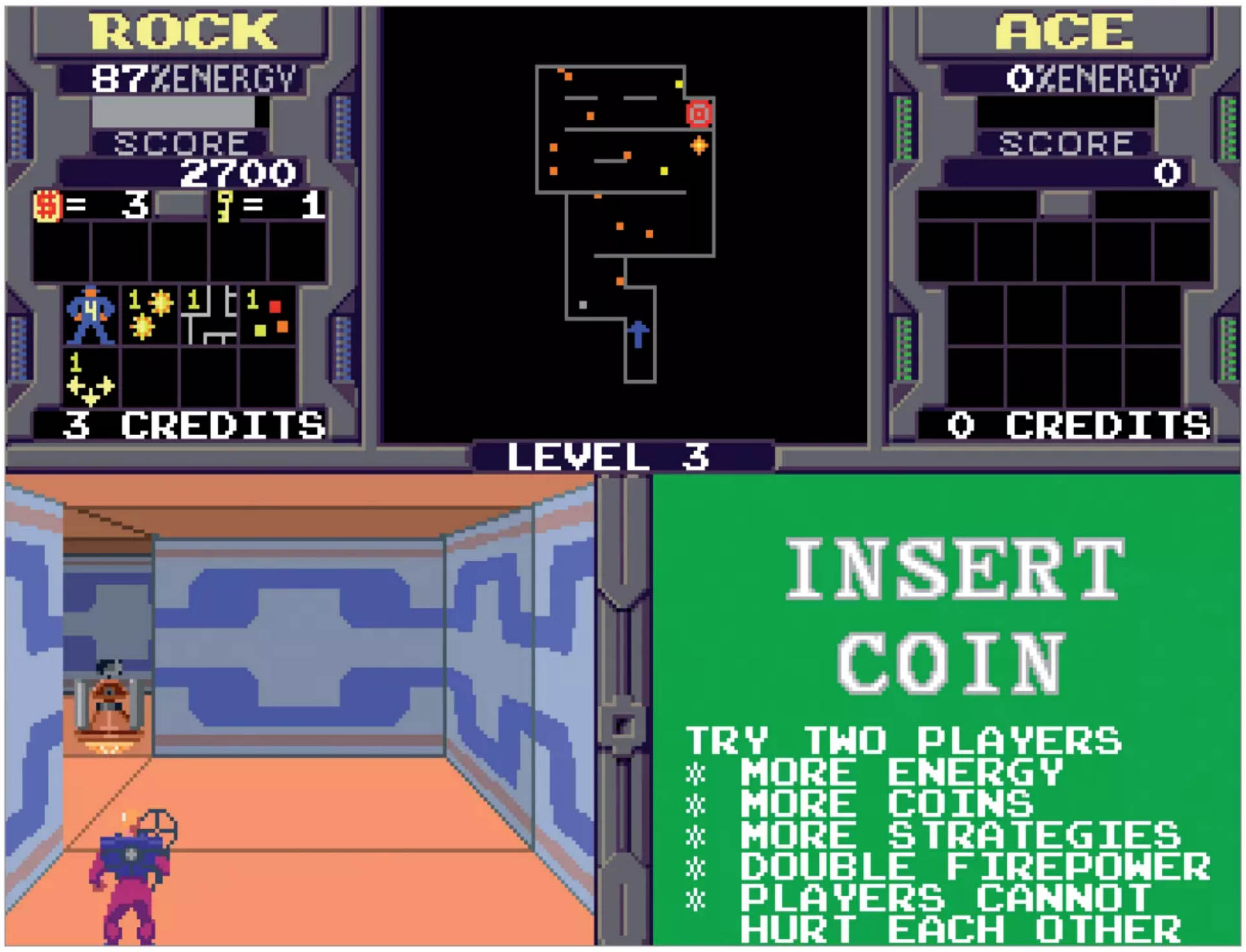
And so when Midway Games shut the doors on his studio in 2003, Ed returned to what he knew and did best. He independently set up a small start-up development company to produce mobile phone games. Three were released by GenPlay, before he left to create similar games for cable TV and will soon be releasing new titles through TvHead.

So, as his illustrious career draws to a close, we have to wonder – will he finally have time to enjoy his accumulated riches or did the Golden Boy, like so many before him, blow it all on wine, women and song?

"You got part of that right… my ex-wife got half the money. No, I was never into wine and song. I'm retiring shortly, so hopefully I can use what's left, but not on fast cars and loose women. Oh man, now my wife's laughing at me…"

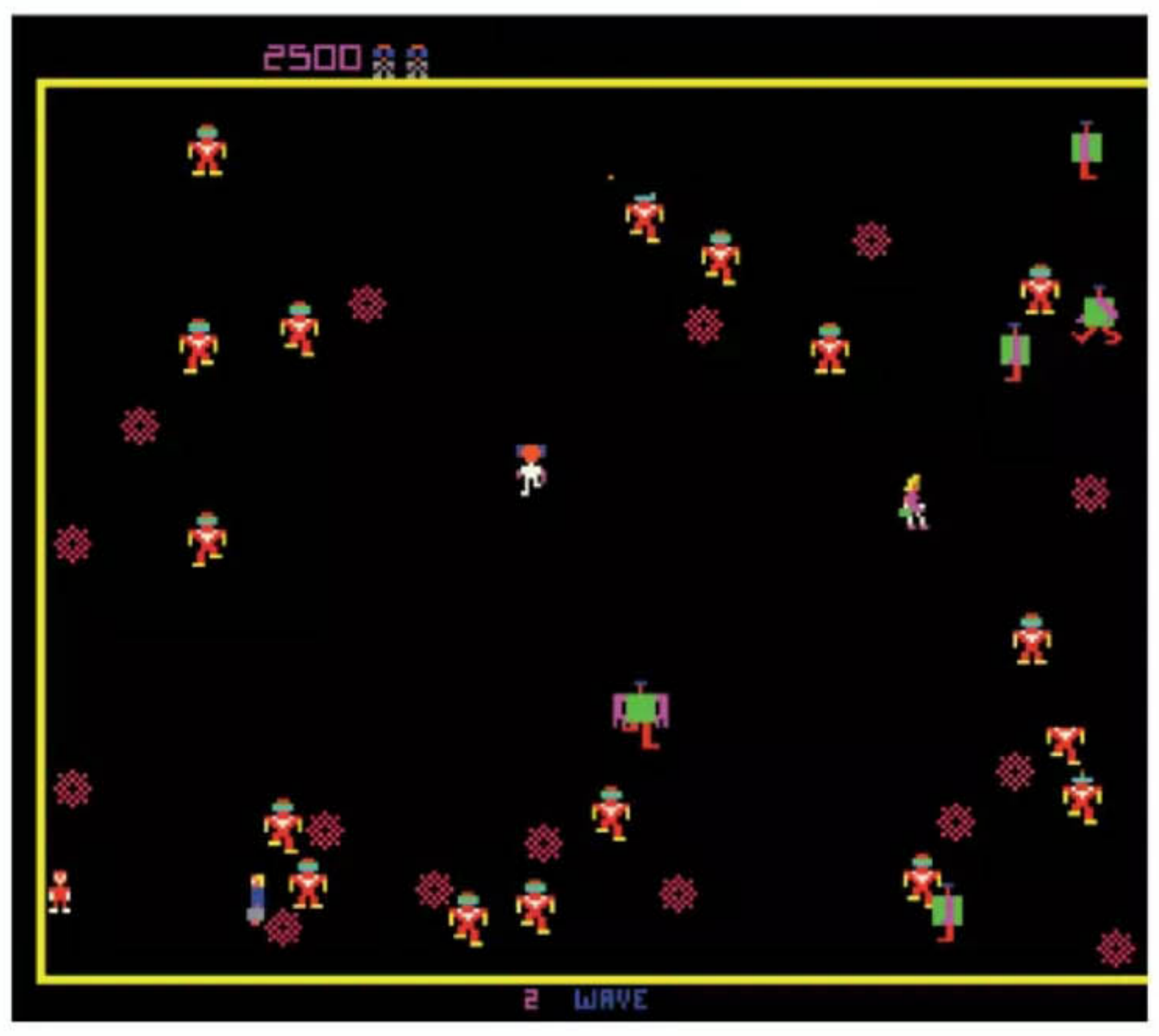
Well, if he can enjoy it half as much as we've enjoyed his wondrous creations, I'm sure he'll be the one that's laughing...

"I LIKED IT WHEN GAUNTLET WOULD SAY, WIZARD IS EATING MOST OF THE FOOD, TO POKE THE OTHER PLAYERS INTO THINKING 'HEY, ARE WE GONNA LET HIM GET AWAY WITH THAT!'" **ED LOGG**



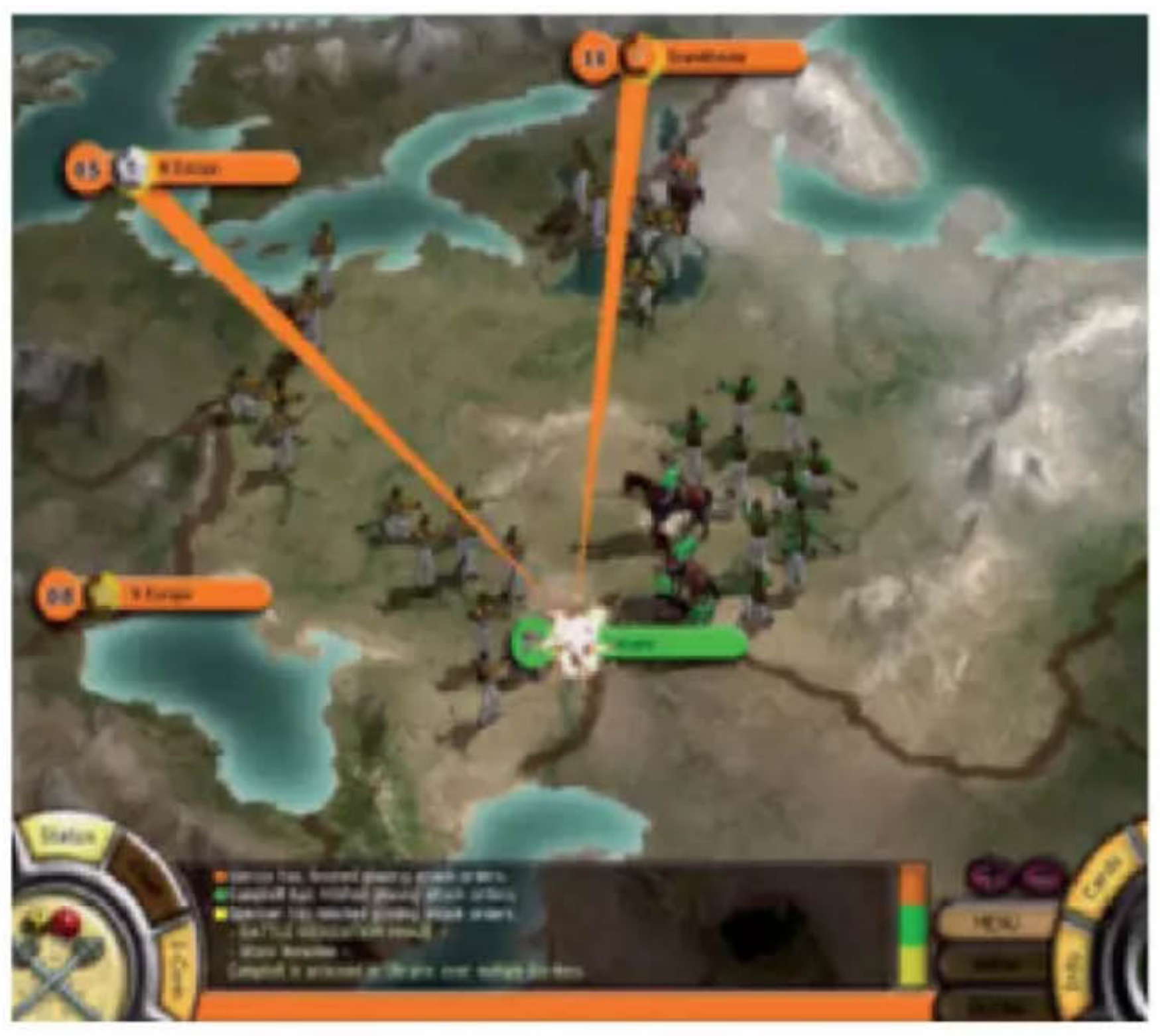
» Xybots began as Gauntlet 3 before heading down a Major Havoc-style corridor…

ED LOGG
DESERT ISLAND DISKS



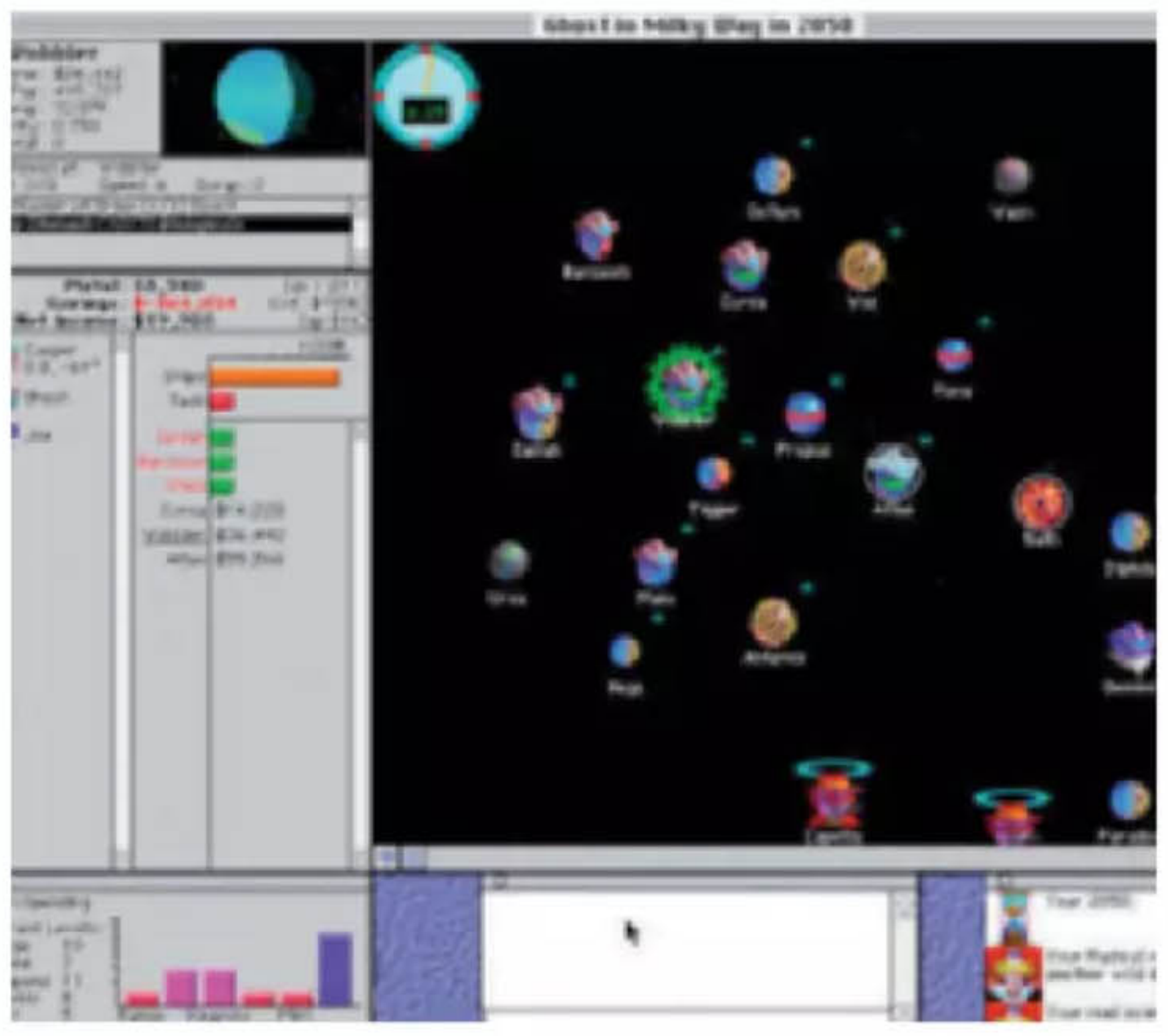
ROBOTRON
ARCADE

1 It's the most chosen Desert Island Disk? No kidding. For good reason, too. I love it because it's a real adrenaline rush to play it. I always crank it up to difficulty 10 and just play it on that. An excellent game that's still fun to play over and over again.



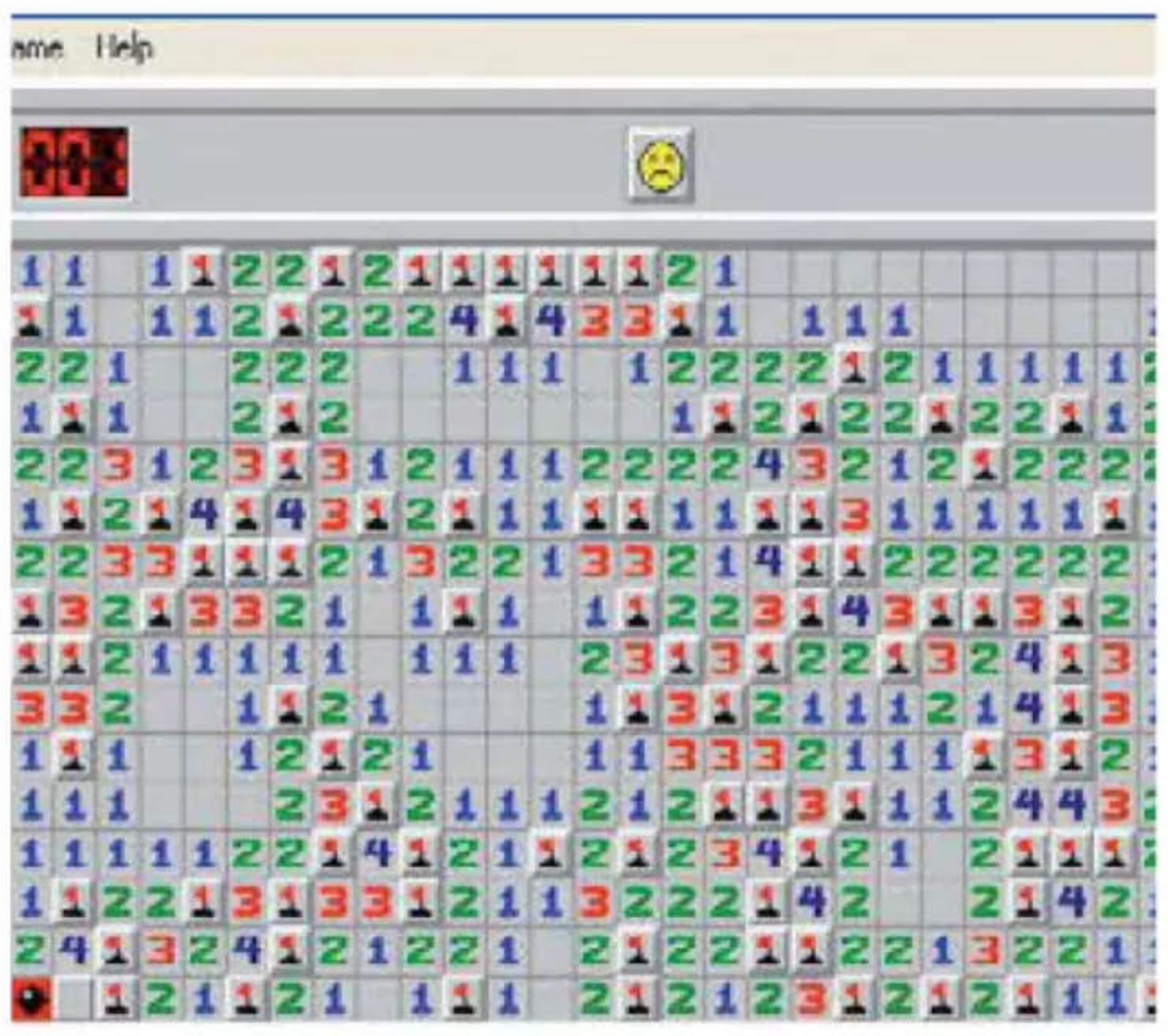
RISK 2
PC

2 The original, of course, is extremely popular and it's only natural that the digital version would work just as well with audiences. This real time strategy game is a fabulous idea. I'd love to play this online with lots of people. My only fearis that I might get a little bit too competitive!



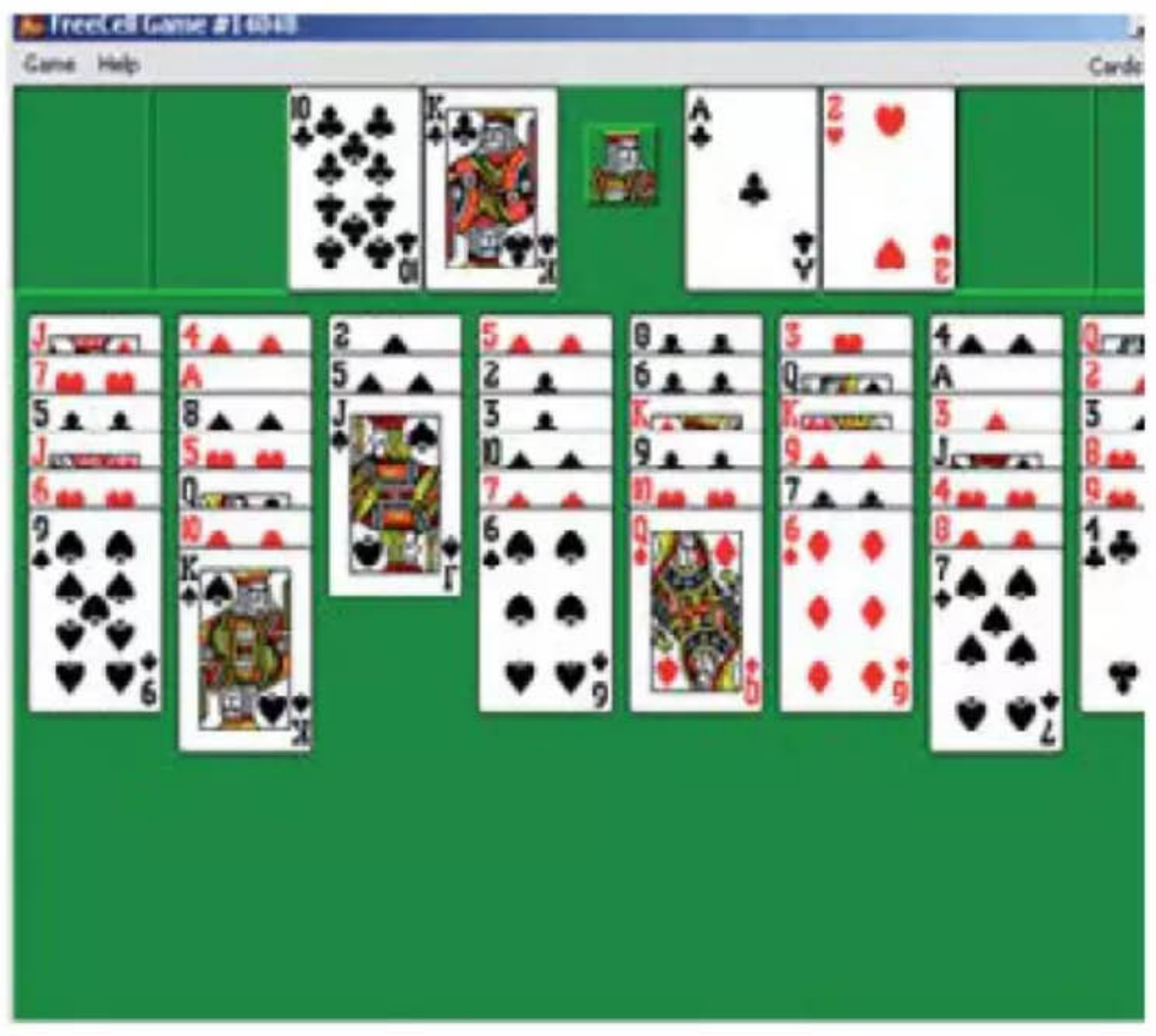
SPACEWARD HO! MAC

3 I originally played it on the Mac. It's basically a 'conquer the universe' resource management game, but most of that genre these days are all about managing tons of resources, which drives me nuts. This has basically three – money, technology and savings – and I think it's a great game.



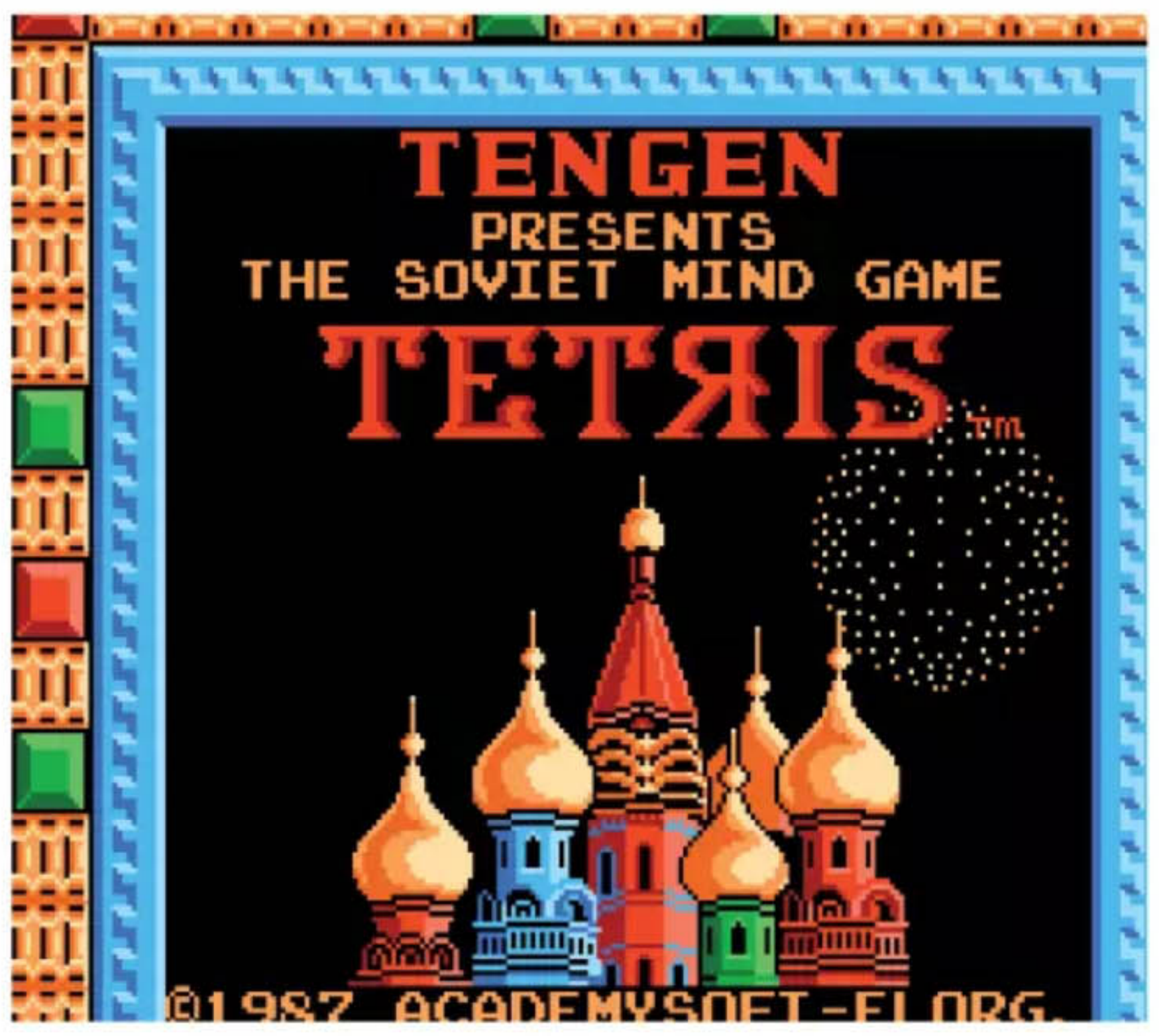
MINE SWEEPER
PC

4 Do I play it to fill in five minutes between jobs? You mean an hour?! I'm still constantly trying to beat 1 minute 40 seconds on the expert level. I did it once – 1.39 is my best! Definitely one of the most memorable and addictive little games.



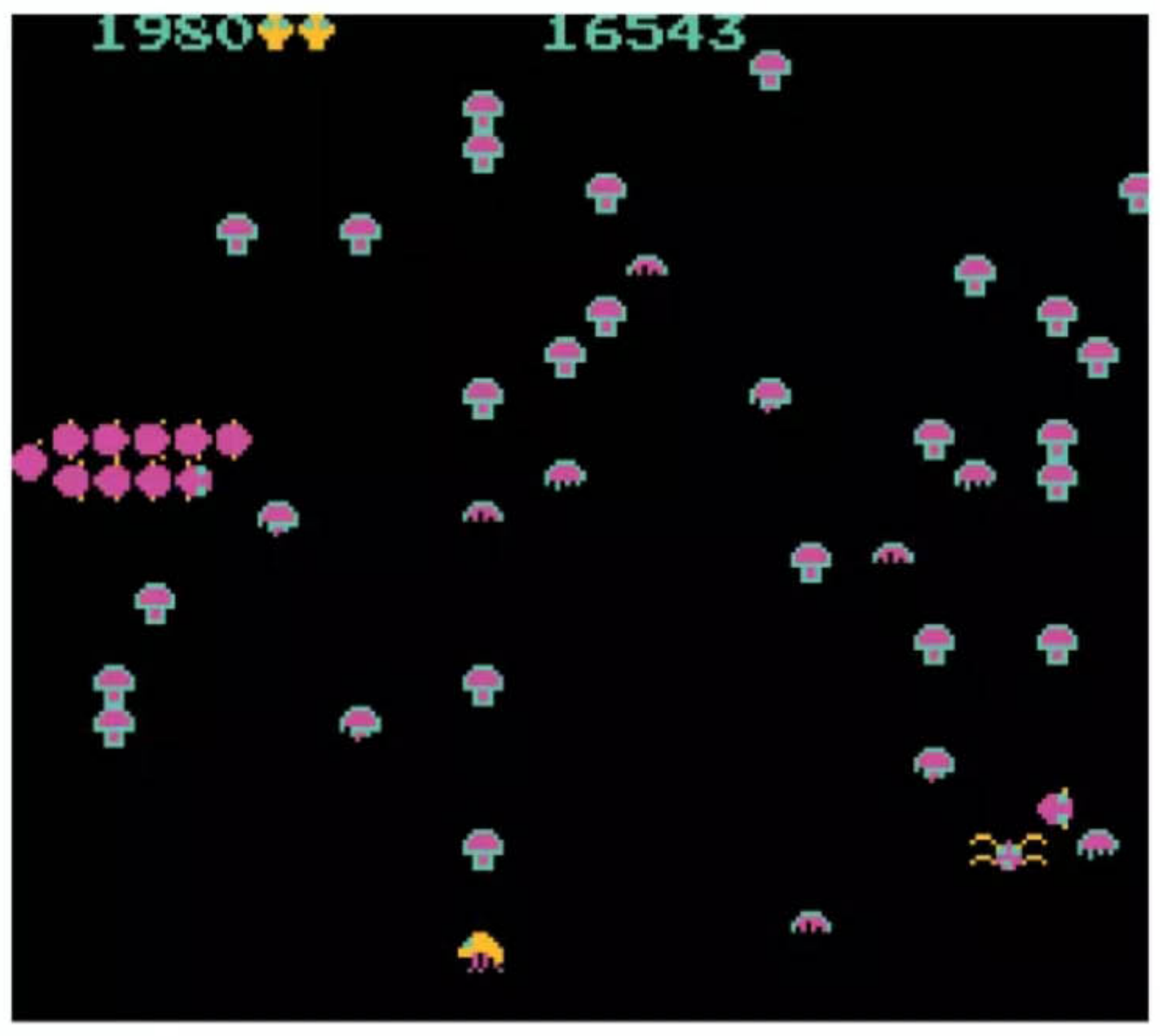
FREE CELL
PC

5 The appeal is that it really teaches you patience, as promised by the game's more traditional name. I can usually win all the games but I get lazy. I paint myself into a corner and just go, 'shit'. I've got up to 455 consecutive wins but I'm still always screwing up. You need to look ahead – it's all visual, man.



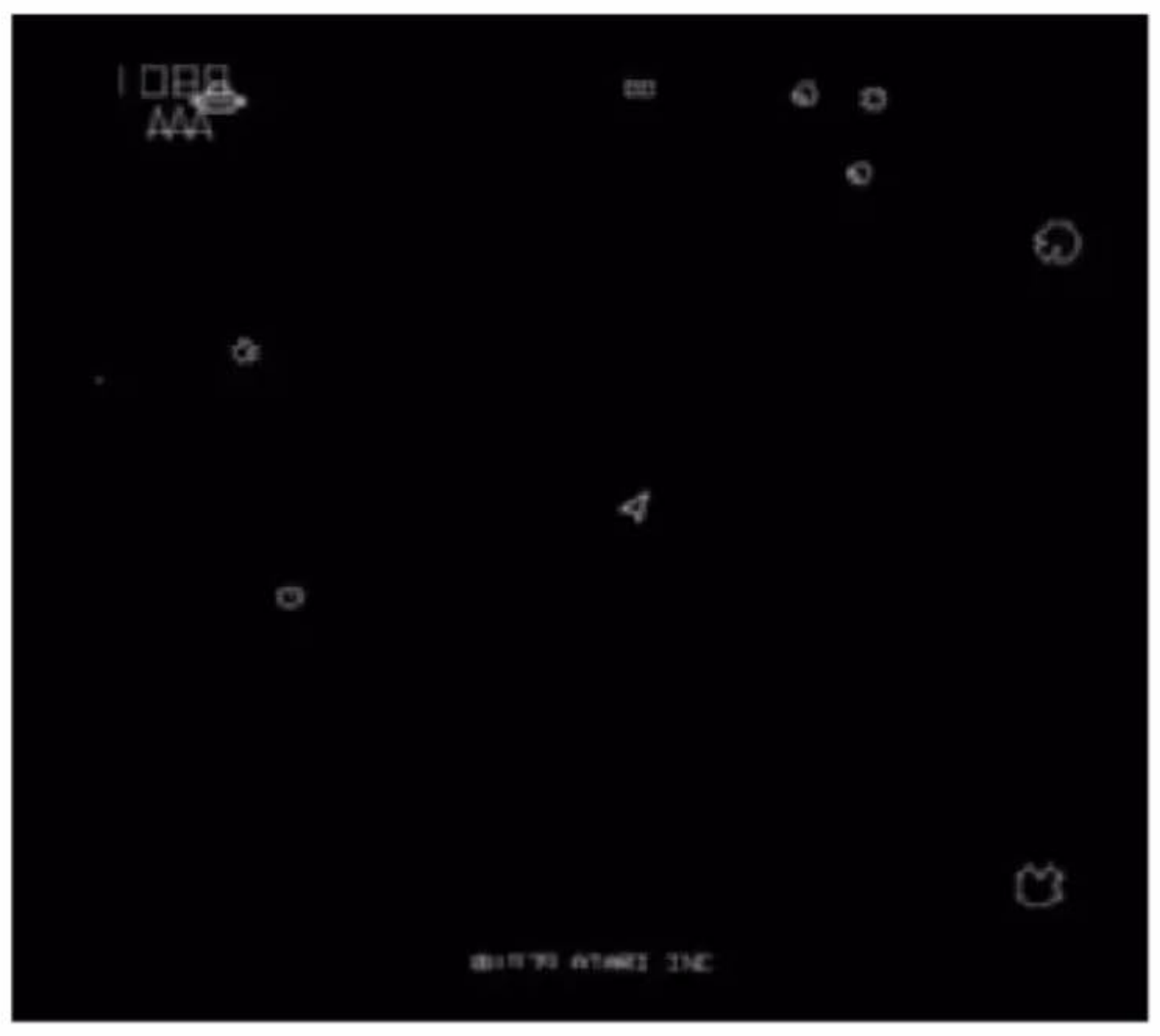
TETRIS
NES

6 Yeah, I'll take my version. I think it's the best and hey, that's not just my opinion. I'm now with a company who were trying to get a license for *Tetris* and the guys who owned it said the best version of the game was the one I did. One of our guys said, "Well, we've got him working for us now…" I think it might have helped.



CENTIPEDE
ARCADE

7 I go back to it and say, 'Gee, it's still got it.' I can see why people got addicted to *Centipede*. You kind of know when you've done that when you leave work and people are still playing your game… and they're still there when you arrive the following morning.



ASTEROIDS
ARCADE

8 I think the popularity of Asteroids came down to how it gave you plenty of choices of how to play – you can lurk, fly around, run away, stay in one place. My first wife loved the game and had her own machine before we met. So naturally, she loved the creator behind it.

HOWARD SCOTT WARSHAW

HE PRODUCED A TRIO OF MILLION SELLING GAMES IN THE EARLY DAYS OF ATARI AND THEN CARELESSLY BROUGHT THE WHOLE VIDEOGAMES INDUSTRY CRASHING DOWN. HE WENT ON TO BE AN AUTHOR, FILMMAKER, PHOTOGRAPHER, TEACHER AND ROBOT-BUILDER. CAN HOWARD SCOTT WARSHAW SIMPLY NOT SETTLE?

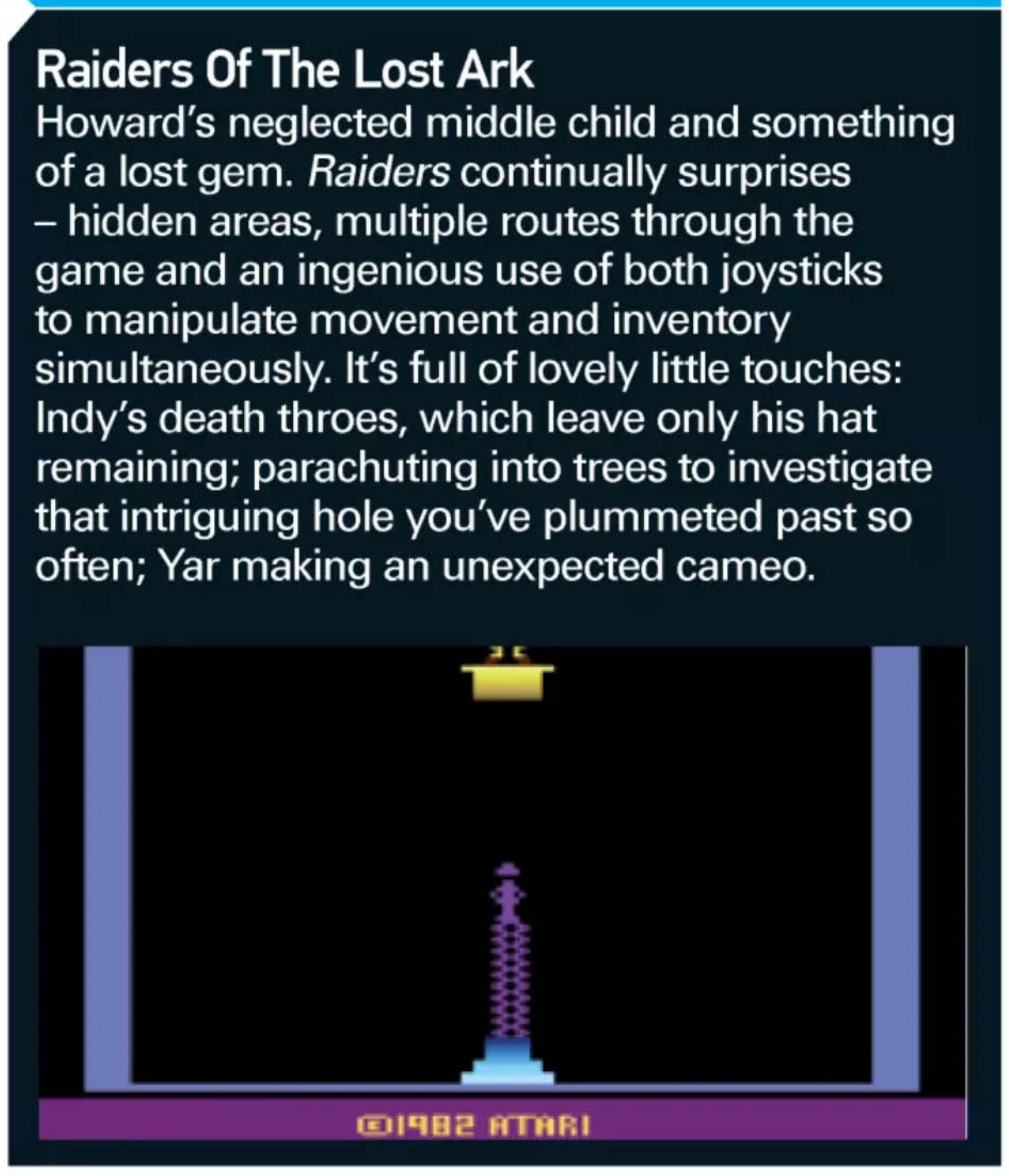
DATAFILE

NAME: HOWARD SCOTT WARSHAW
DATE OF BIRTH: 30.7.57
FIRST JOB: SHORT ORDER COOK
CURRENTLY: EXECUTIVE PRODUCER, SCOTT WEST PRODUCTIONS
FAVOURITE FILM: DR STRANGELOVE

YOU MUST PLAY. . .

Raiders Of The Lost Ark

Howard's neglected middle child and something of a lost gem. *Raiders* continually surprises – hidden areas, multiple routes through the game and an ingenious use of both joysticks to manipulate movement and inventory simultaneously. It's full of lovely little touches: Indy's death throes, which leave only his hat remaining; parachuting into trees to investigate that intriguing hole you've plummeted past so often; Yar making an unexpected cameo.



“Actually, my motivation comes from your country,” explains Howard, who even greets us with a particularly well-researched ‘ey up mi duck’. “I've always tried to follow Monty Python's advice – Now for something completely different…”

It was a creed he applied consistently in his approach to game design. “I need a reason each time I do a game – something that makes me feel like it's really worth doing. With *Yars' Revenge*, I wanted my first game to make a big splash on the screen and break new ground in the gaming world. With *Raiders Of The Lost Ark*, one of the first movie licences, I was trying to make the biggest adventure game there'd ever been on the VCS. With *ET*… well, *ET* was about getting a f*cking game done in five weeks!”

The E.T. saga

Ah yes, *ET*. 'The Worst Game Ever Made' ™. A game so malignant, millions of unsold cartridges had to be buried in the desert beneath concrete, yet it still caused the collapse of the industry from beyond the grave. A game everyone has heard of, few have played and a game that truly qualifies for 'urban legend' status.

“It's a compelling myth,” Howard chuckles. “No one's ever retrieved a piece of *ET* from the desert and it would have required a conspiracy of Kennedy Assassination proportions to have kept it a secret for so long. [Edit: since this interview copies of the game have been retrieved from the desert, proving the urban myth. The excavation was documented in the documentary *Atari: Game Over*] To think I single-handedly toppled a billion dollar industry cracks me up…”

It was an industry the young Howard didn't really seem destined for. He'd consciously avoided computers during his schooldays in New Jersey and it wasn't until his Economics degree that he rather reluctantly took a computer class. He became smitten overnight, voraciously consuming the entire semester's work in days. Hungry for more, he took a job at Hewlett Packard after leaving college, only to discover the grim reality of cube life. Rather than going quietly insane with boredom, Howard decided to do it loudly and with gusto. His outlandish behaviour caught the attention of one co-worker who knew of a place where eccentricity was the norm…

E.T.
©1982 ATARI

» *E.T. The Extra-Terrestrial* was a massive flop for Atari and remains the stuff of urban legends.

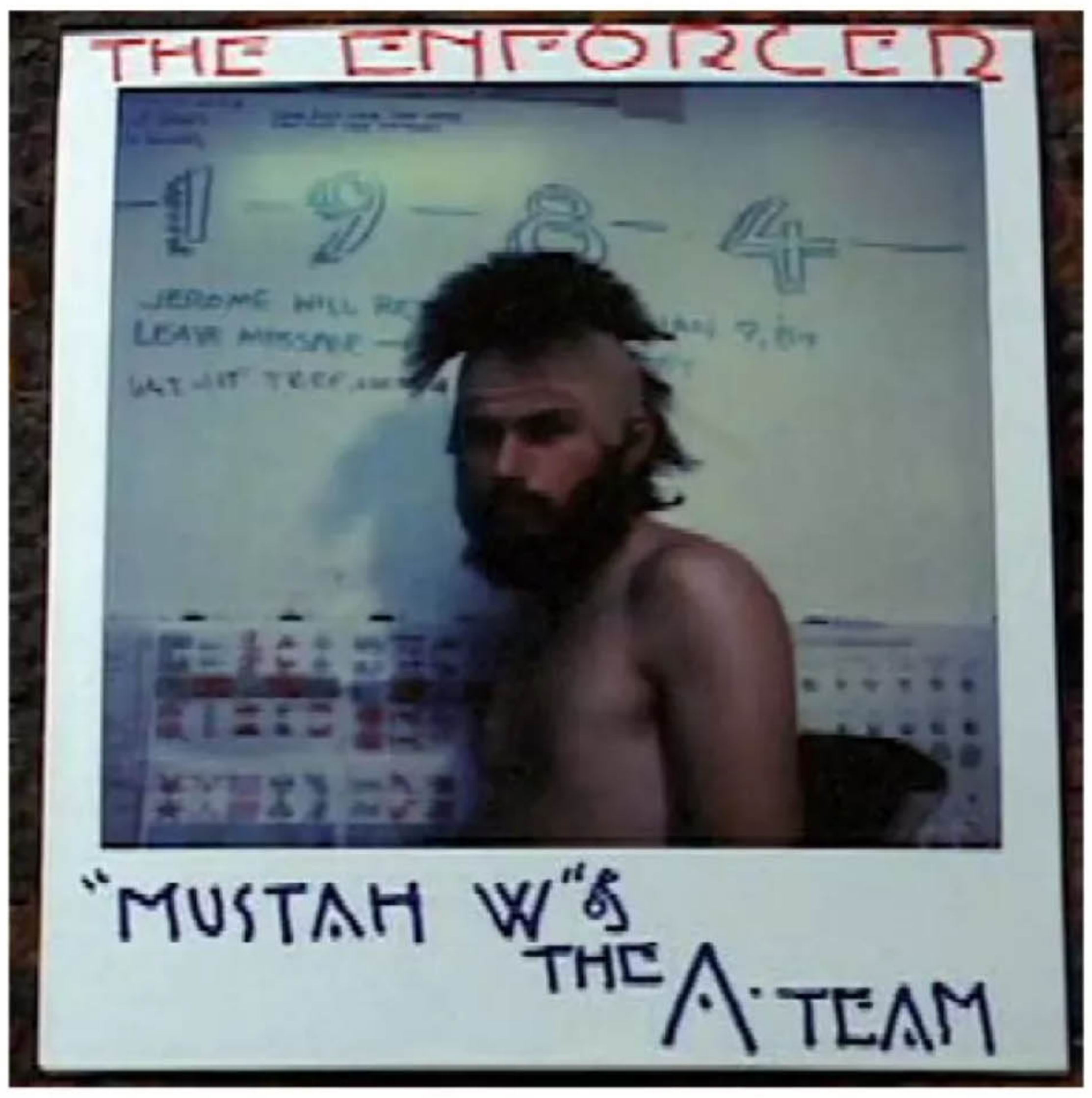
“I went to Atari for an interview and immediately I knew it was the place for me,” Howard tells us. “[It was] relaxed, creative, fun and the technical side was really interesting. But they turned me down for being too straight! Maybe it was my formal educational background and my time at HP. Or perhaps it was the herring-bone tweed jacket with leather elbow patches… but hey, I was wearing sandals!”

Much pleading and a 25 per cent pay cut later, Howard persuaded Atari to give him a chance. He also convinced them that the project he had been assigned – a conversion of the arcade game *Star Castle* – would 'stink' but he could take the game elements and come up with something good. The resulting *Yars' Revenge* boldly announced Howard's arrival on the screen.

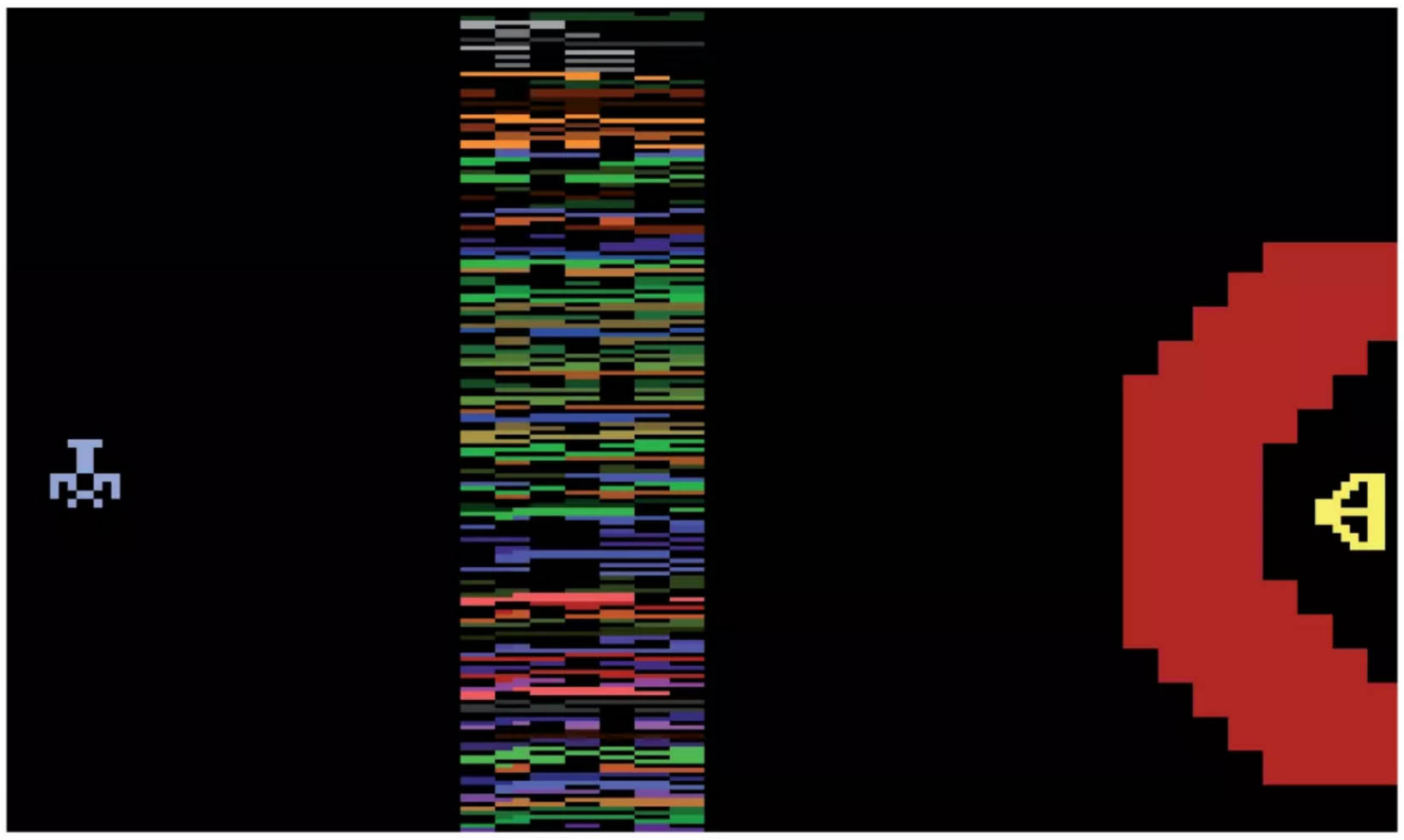
“I wanted to fill the senses,” he enthuses, clearly proud of the game that cemented its place in history as the biggest-selling original title for the VCS. “I wanted players immersed and to really feel when something happens in the game. So there's a death sequence, a victory animation, a full screen explosion, lots of colour and glitter.”

The game deftly combined innovation with immediacy, and had some clever technical touches (the eye-catching Ion Zone was created using the raw game code itself to randomise the graphics and colour registers and you'll also find the initials HSW hidden away as an Easter Egg) and proved especially appealing to female players. “I think it may have something to do with the oral component,” muses Howard, with hopefully only his tongue in his cheek. “Like *Pac-Man*, you nibble and you run away. The more you eat, the closer you get to danger…”

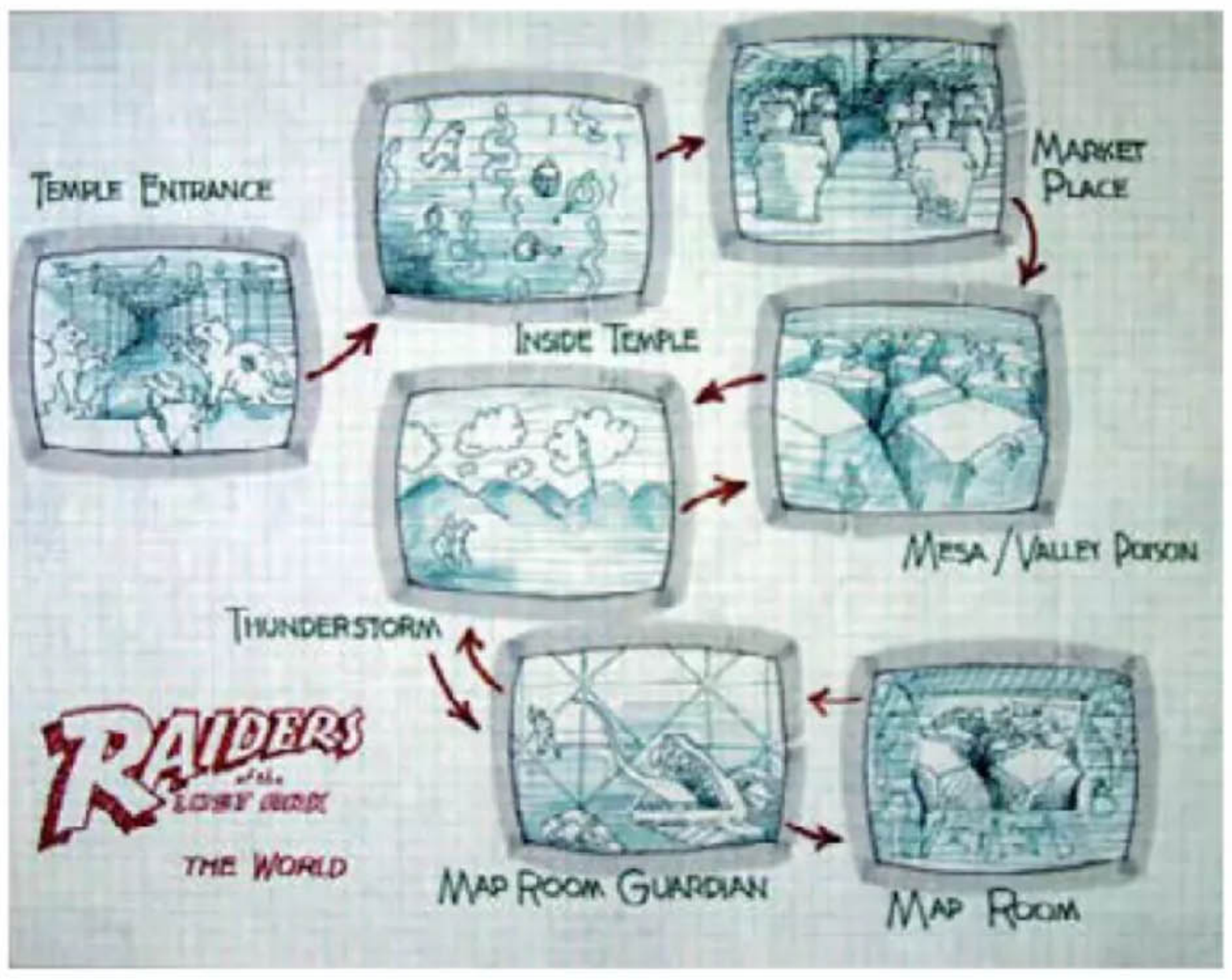
For his next project, the theatrical Howard took the concept of method-acting to its logical conclusion – method programming. He donned Indiana Jones' trademark hat and would roam the corridors of Atari HQ cracking a ten-foot bullwhip at terrified marketing suits. “I said the whip was for R&D – Research and Discipline. I would try anything to increase my immersion in the character and help make the game better.”

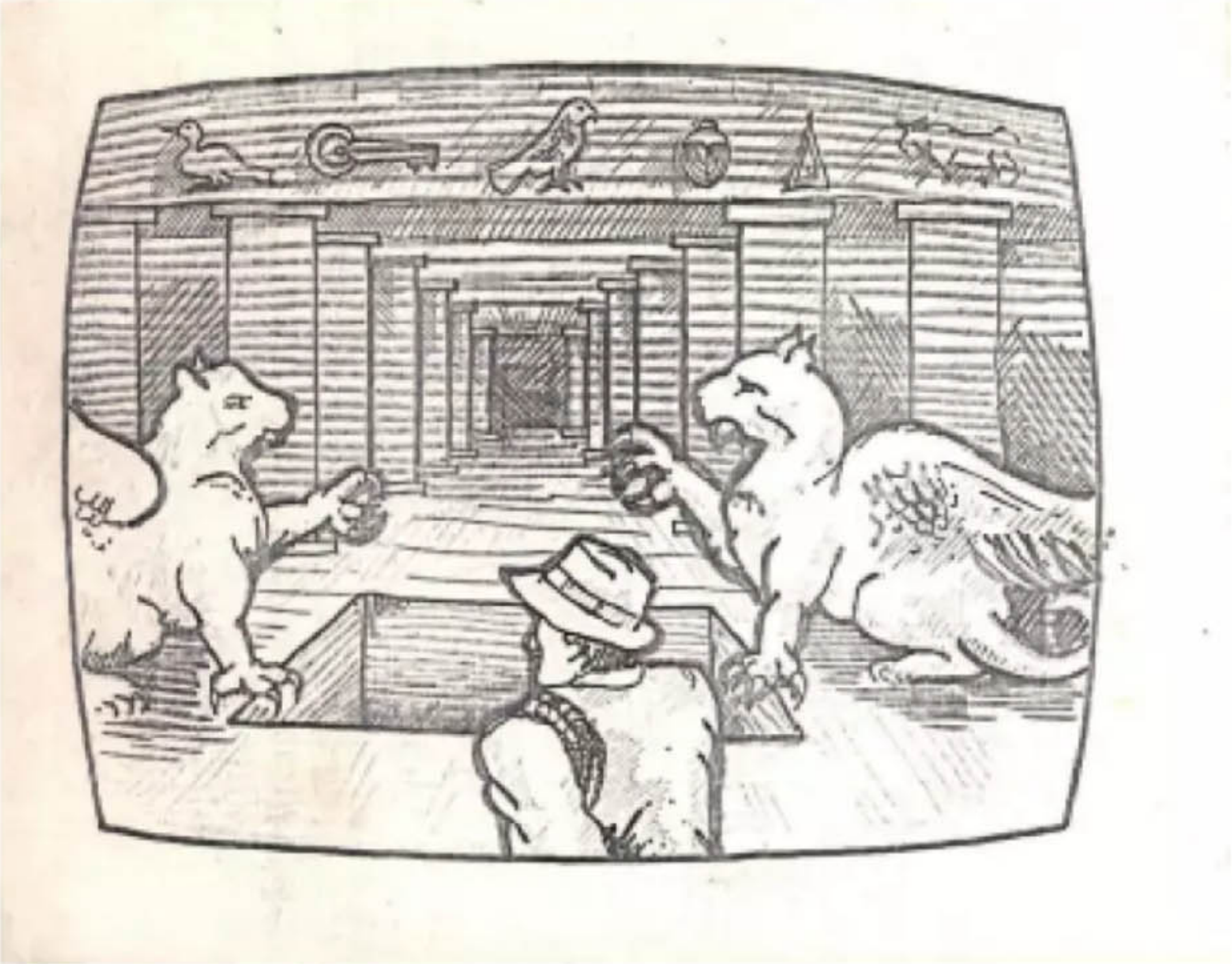


» Howard was initially considered too straight for Atari. Okaaaay…



» Howard's first release came with a comic he penned to explain the elaborate back-story.





» A Retro Gamer exclusive – Jerome Domurat's never previously published concept art for *Raiders Of The Lost Ark*.

Raiders Of The Lost Ark became his greatest production. Howard crammed in 13 distinct locations into the limited memory of the 2600 and populated them with slithering snakes, black market sheiks and a wealth of fiendish puzzles. Amongst the array of assailants facing the intrepid adventurer is a 'raving lunatic' – was this perhaps an indication of Howard's mental state at attempting such a grand endeavour on the humble VCS?

"No anthropomorphism there," he assures us when we ask him. "Though that was kind of how I felt four weeks in to *ET*…"

Successfully converting a Spielberg blockbuster into game form was indeed a double-edged sword. When Atari management decreed *ET* must be released in time for Christmas 1982, cutting the typical development period of six months down to a miniscule five weeks, Howard's standing with Spielberg and his love of a challenge meant he stepped up to the plate. It was a colossal effort, which involved virtually continuous coding and a mountain of marijuana, but Howard delivered. Sort of.

"I submitted a complete, non-trivial game on time, so in that sense it was a success. Many didn't enjoy playing it; so on that level it was a failure. It sold well over a million – a success! It needed to sell seven million to make money – a failure! Ah, it's all relative…"

The hardware master

What *ET* did demonstrate was Howard's increasing mastery of the hardware. He returned to the frenetic action of *Yars'* and through ingenious vertical separation, managed to display multiple character sprites on-screen simultaneously. *Saboteur* was an original, multi-directional shooter and was 95 per cent complete, when Atari got the *A-Team* licence and approached Howard.

"I thought what the hell – let's put a giant Mr T head in there! I began reworking the graphics and some of the gameplay, but then Atari imploded, the Tramiel's came in and that was the end of game development."

Howard did meet with crazy fool Jack Tramiel to discuss game ideas. However, when the new boss seemed more concerned that Howard's wife had a job rather than waiting at home with his slippers ready, he knew it was time to move on. It wasn't quite the end for *Saboteur* though, which finally appeared on the Atari Flashback Plug and Play joystick released last year.

For the next decade and a half, Howard turned his creative talents to everything from videography to industrial robotics, but was eventually lured back to the games industry when he joined 3DO at the end of Nineties. But the return was bittersweet.

"What a reality crash! Games used to be about finding something innovative and fresh and now it had become a risk minimisation exercise. Trip Hawkins, the CEO, had assembled possibly the greatest collection of talent in game history – wonderfully creative people like Rob Zdybel, Bill Budge, folks from Atari coin-op, Magnavox and Mattel – and then imposed ludicrous deadlines and provided no budget. To hear him stand up and say, 'With another two weeks, are you really going to make a better game? Will it offset the two weeks of sales we've missed out on?' It just felt like everything I'd loved about the industry had been killed."

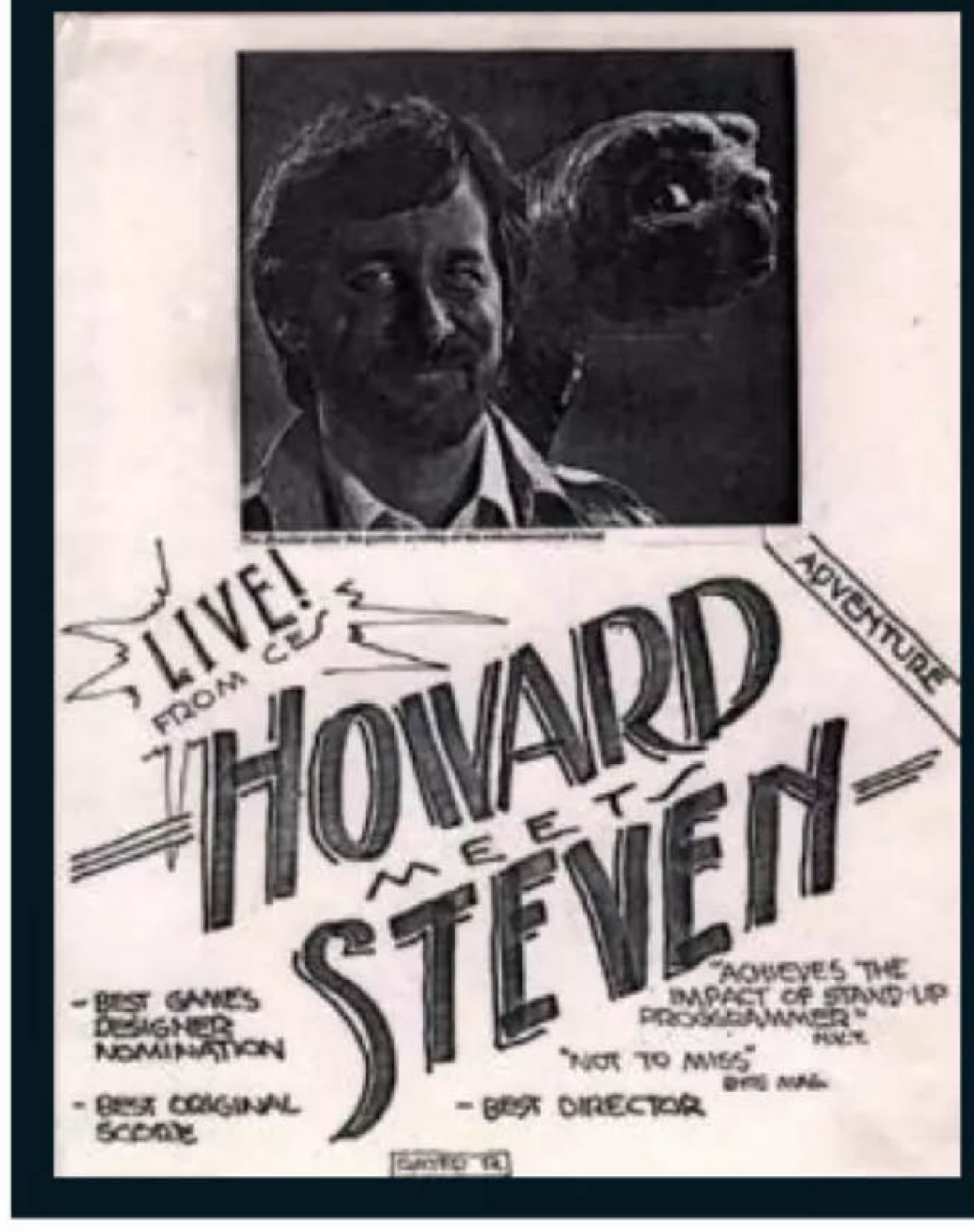
The bitter experience was further compounded when 3DO closed its doors abruptly, leaving Howard and many others unemployed and owed thousands in unpaid wages. His disillusionment with the state of the industry gave an added poignancy to his first major work as a documentary maker, as he set about telling the tale of when things at the company were both very different and ominously familiar…

"Atari was really the biggest thing in my life and it affected me in myriad ways. I wanted to make a film that told it from the perspective of those that had actually been working there. Lots of bullshit had been written, trying to sensationalise, but the truth is always more interesting. I needed to make the film, to make my peace with my own experience there.'

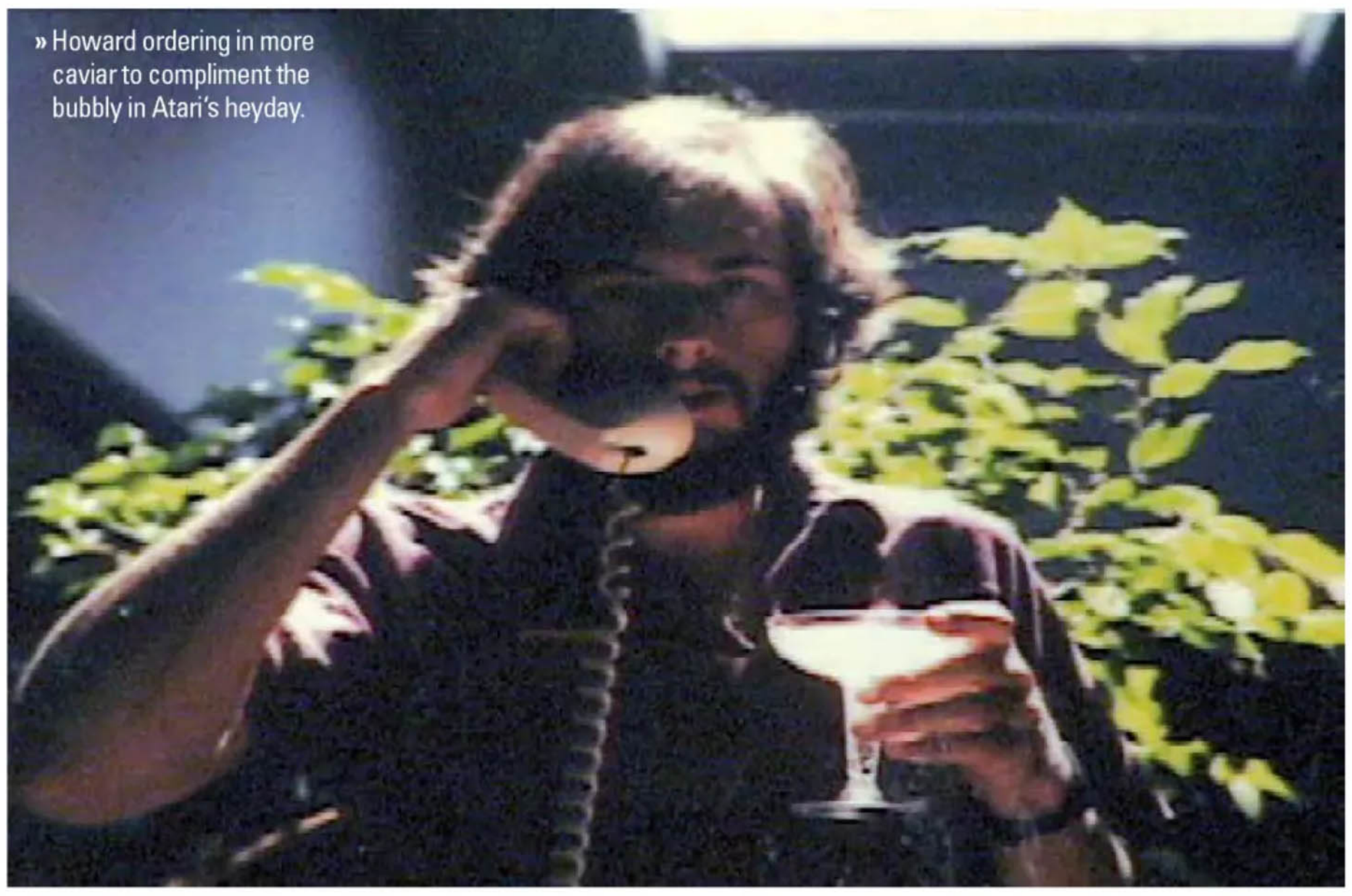
MY DIRECTOR IS AN ALIEN

Howard travelled to Los Angeles to meet Steven Spielberg while programming *Raiders Of The Lost Ark* and decided to break the ice with a typical conversation starter.

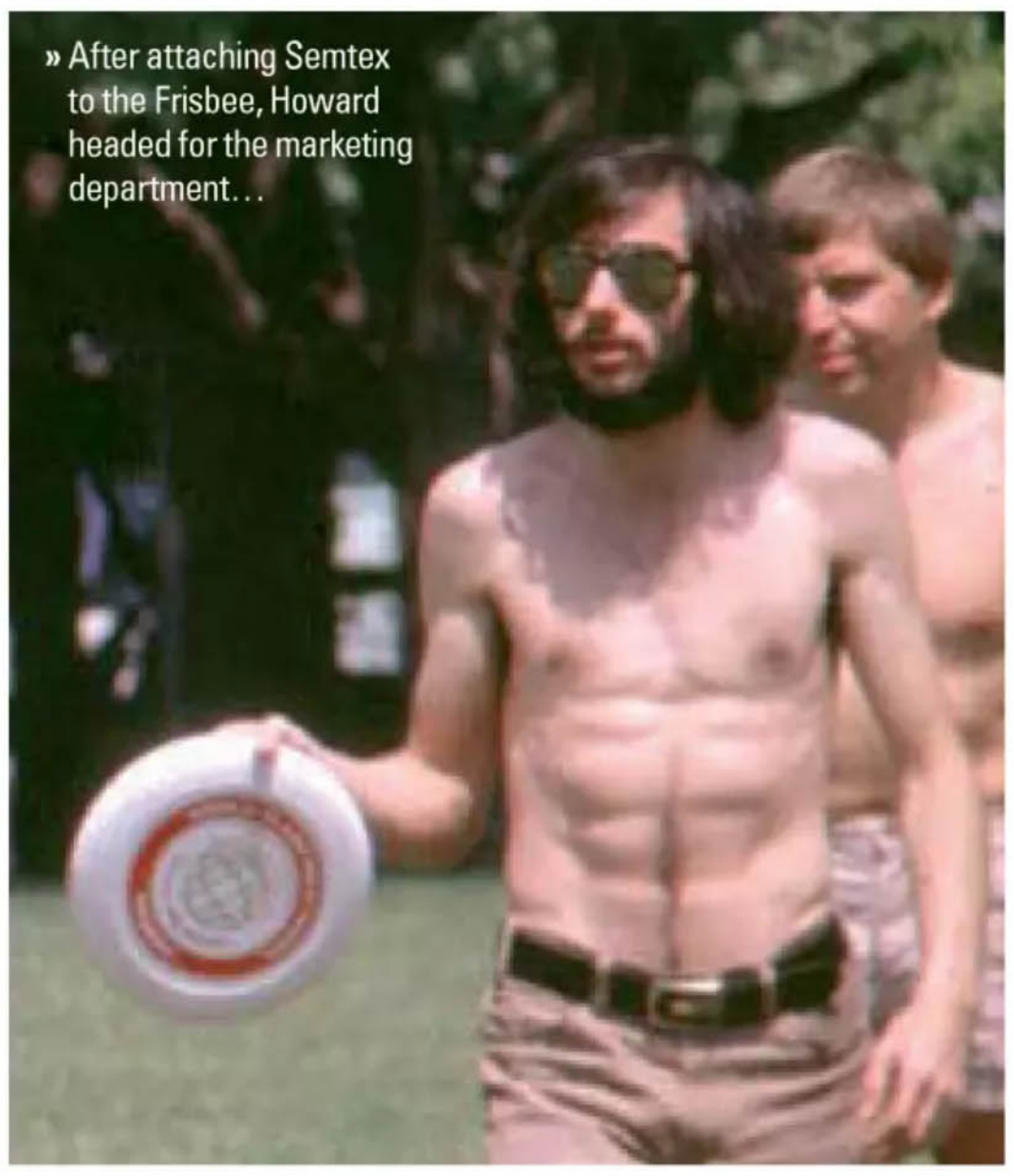
"I told him I had a theory that he was an alien. I figured that contact with aliens was imminent and they were smart enough not to just show up at the door. They needed to 'prepare' the earth, so they send an advance team. You see, with *Close Encounters* and *E.T.*, it was really the first time aliens had been presented positively – friendly figures, not monsters."



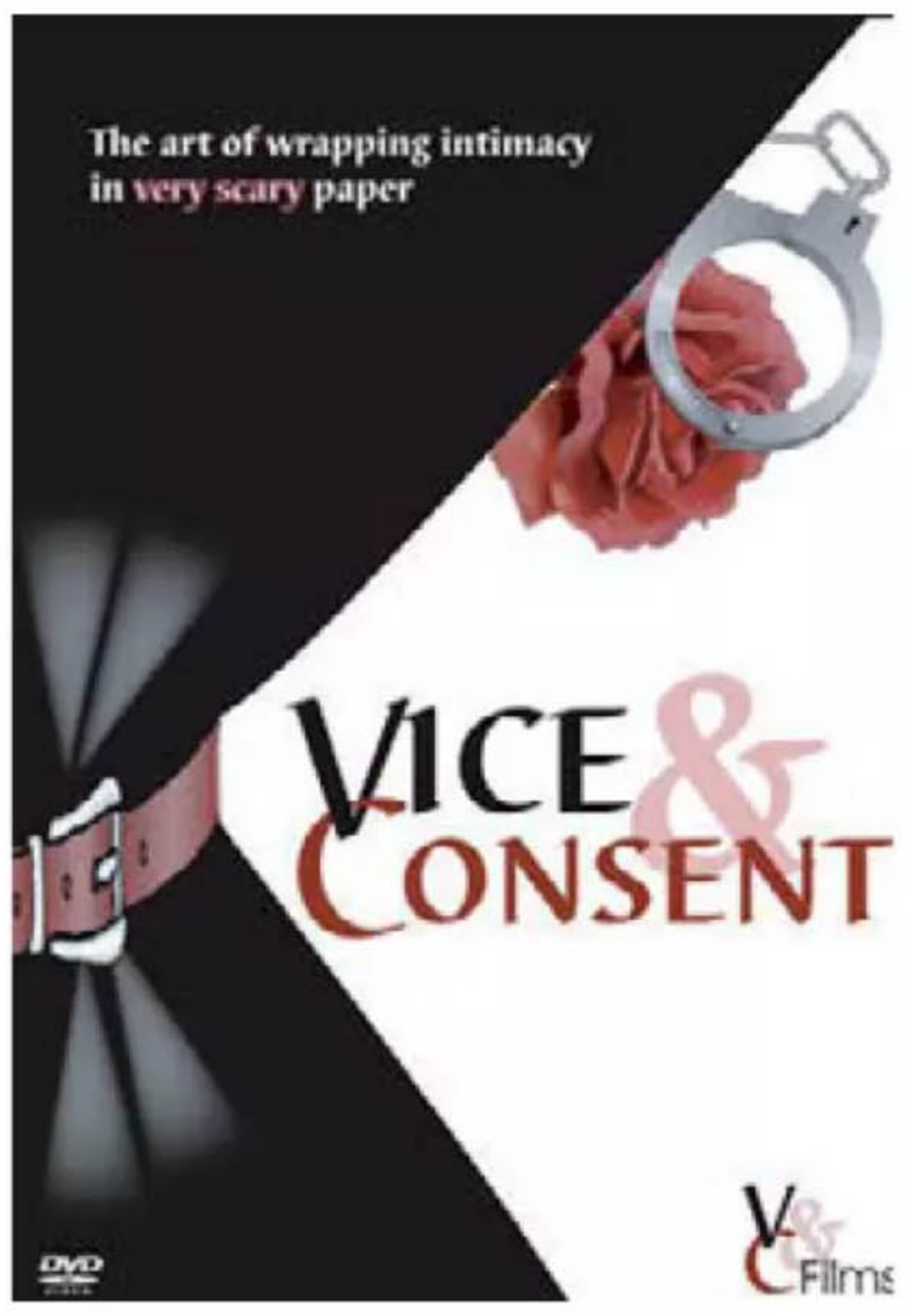
» The flyer knocked up by piss-taking colleagues to commemorate a true meeting of minds…



» Howard ordering in more caviar to compliment the bubbly in Atari's heyday.



» After attaching Semtex to the Frisbee, Howard headed for the marketing department…



» Howard's latest work on the BDSM community. You will never listen to the Barney Song in the same way again. Trust me.

ONCE UPON ATARI

Howard's entertaining and revealing documentary on the Atari story features interviews with such alumni as Todd Frye, Rob Fulop and graphic artist Jerome Domurat, who collaborated with Howard on *Raiders*, *ET* and *Saboteur*. It's a fascinating mixture of crazy anecdotes and exasperated accounts of how the marketing department installed after the Warner takeover at best misunderstood the whole process of game development and at worst, openly despised the programmers. The resulting rift was a major factor in the company's spectacular collapse. Would things have been different if Atari founder Nolan Bushnell had stayed at the helm?

"That's an excellent point and yeah I think it could have been different," agrees Howard. "The people that came in after Nolan were 'org chart' people, who just saw programmers as the line workers at the bottom of the chain."

NOLAN BUSHNELL
atari co-founder

» Atari founder Nolan Bushnell in the *Once Upon Atari* documentary. Rolled 20-dollar note just out of shot.

"WHEN I WAS DOING RAIDERS, I'D CARRY A TEN FOOT BULLWHIP AROUND. I SAID IT WAS FOR R&D – RESEARCH AND DISCIPLINE."

HOWARD SCOTT WARSHAW

Once Upon Atari, was produced in four parts and now available on a single DVD from www.onceuponatari.com, paints a vivid picture of the company during its creative blossoming and subsequent chaotic demise. Told through frank and often-hilarious interviews with all the key players, it easily demonstrates Howard's determination to get to the truth by giving a voice to those who have been previously maligned and misunderstood by others.

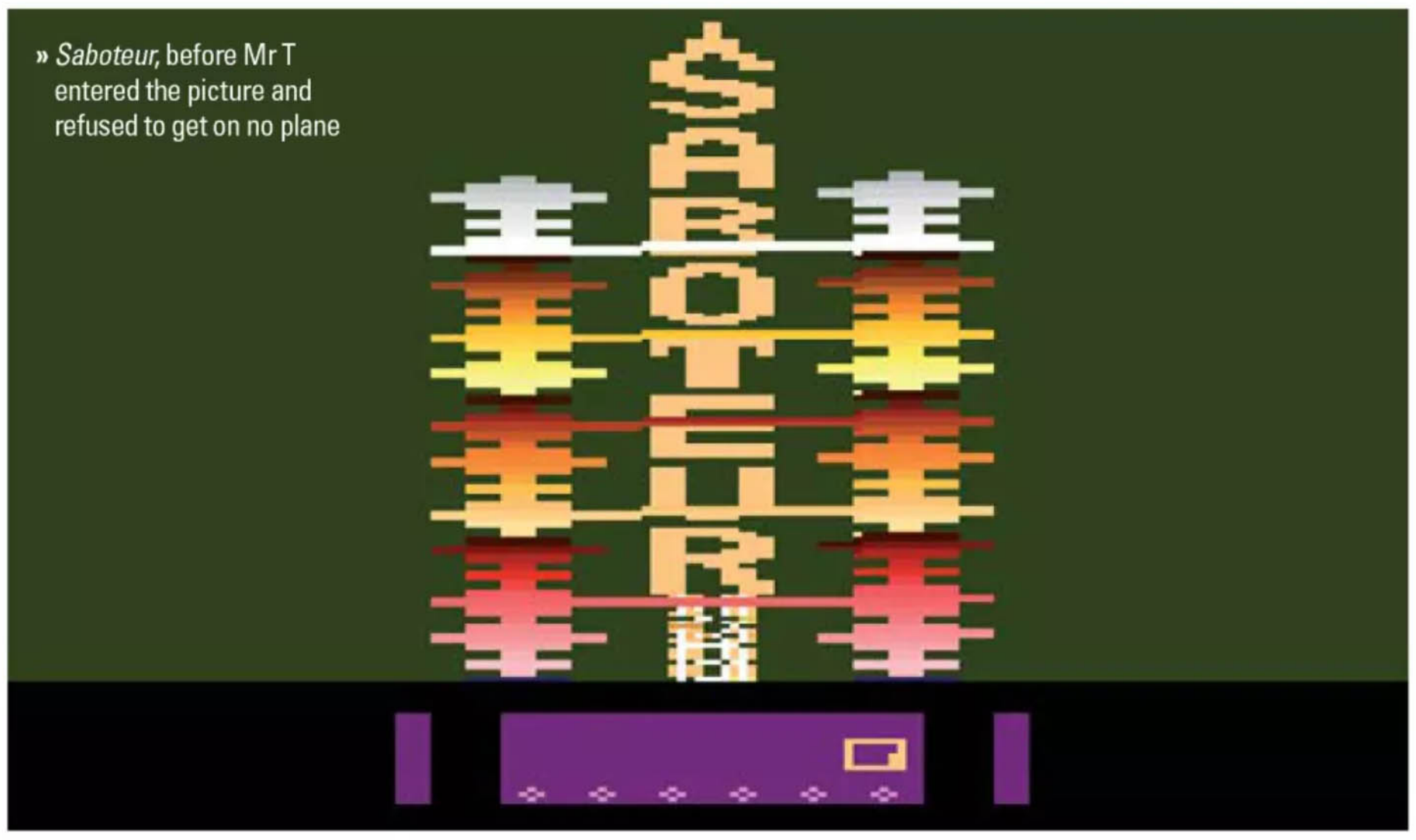
A similar motivation runs through his most recent production, as *Vice And Consent* (www.viceandconsent.com) seeks to present the BDSM community (the acronym stands for Bondage and discipline, Domination and submission, Sadism and Masochism, but you knew that…) in an honest, non-judgemental light. Is there perhaps a parallel between these two apparently disparate subcultures?

"You could argue videogames are safe fantasies, like the BDSM world. And if you want to talk about a group of people willing to put themselves through extreme pain, torture and hardship, that sounds like game development to me…"

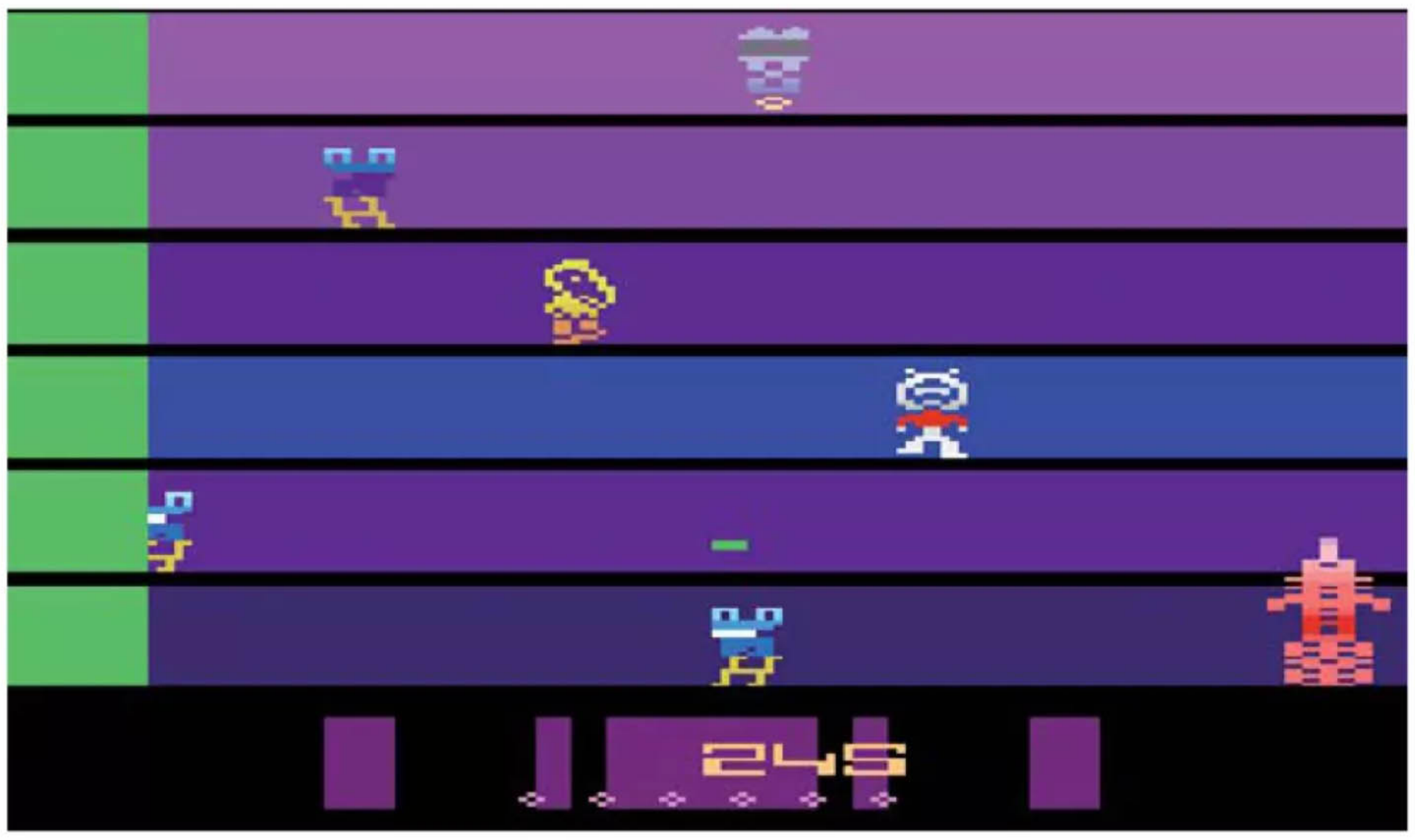
The agony and ecstasy of hacking out code on the 2600 may not be a thing of the past for Howard either, as he casually mentions he still has the design for *Yars' 2* up his sleeve. Whether he ever spoils us with a long-awaited sequel or continues to charm us with his wit in any number of creative fields, we look forward it.

Once Upon
ATARI
VIDEO GAMES

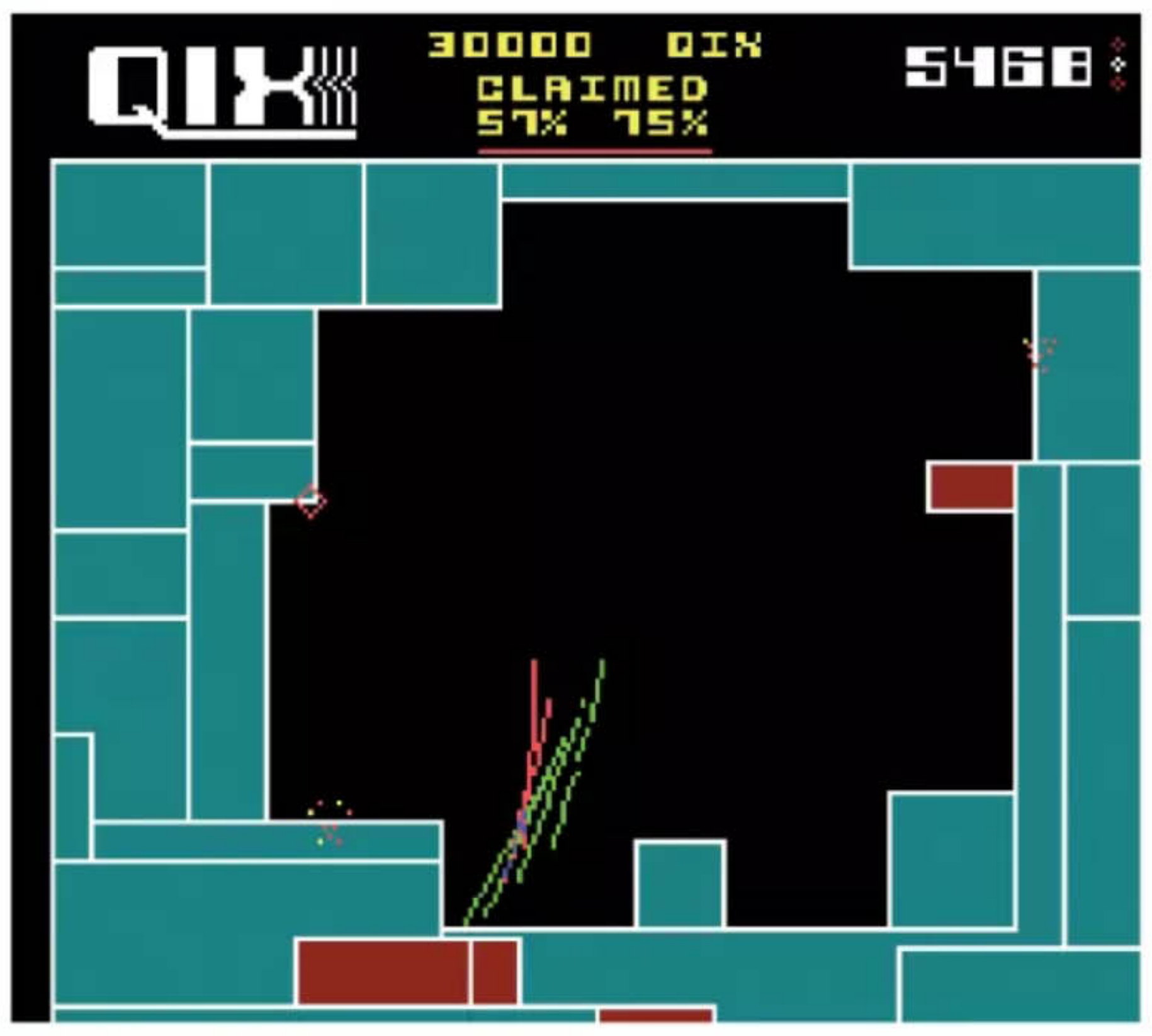
» Relive the sights, sounds and, yes, smells of life at Atari…



» *Saboteur*, before Mr T entered the picture and refused to get on no plane

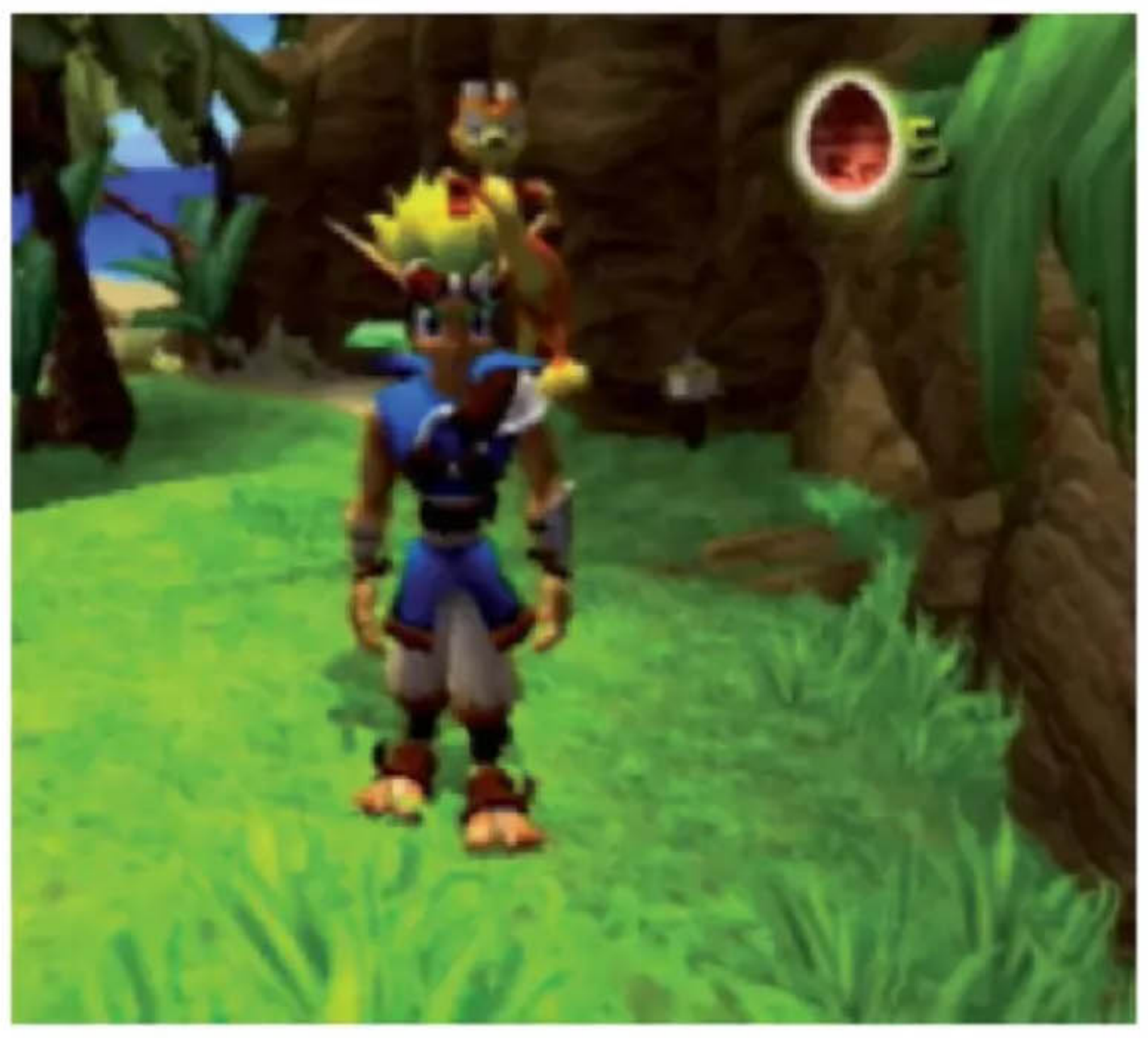


HOWARD SCOTT WARSHAW'S FAVOURITE VIDEOGAMES



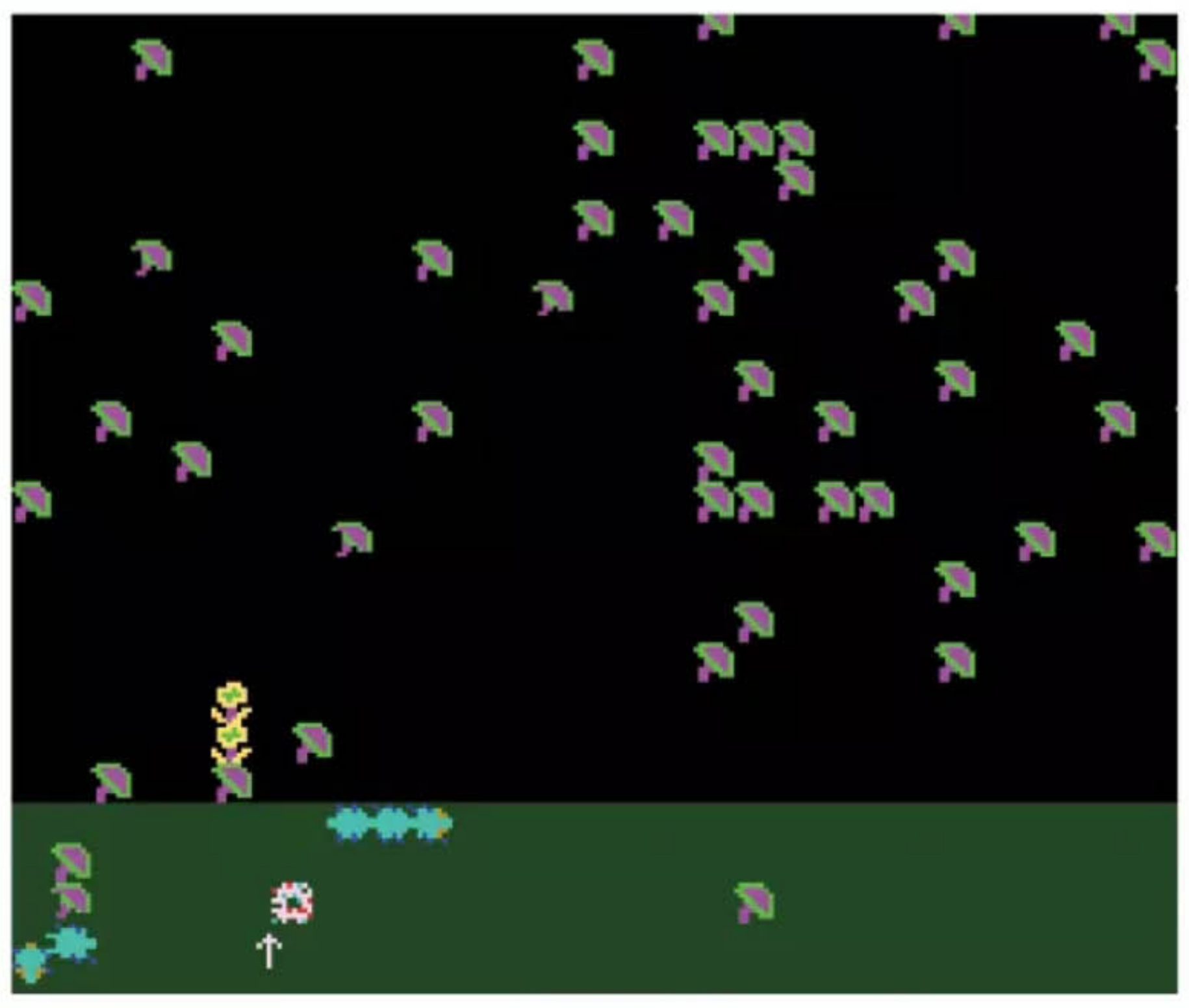
QIX ARCADE

1 A great game that really demonstrated out-of-the-box thinking. An interesting application of geometry and space management. Most games were shoot and avoid, but this was about carving out a space. There was a safe time and a dangerous time. It had a really different approach and illustrated that you don't have to think traditionally about what makes a game.



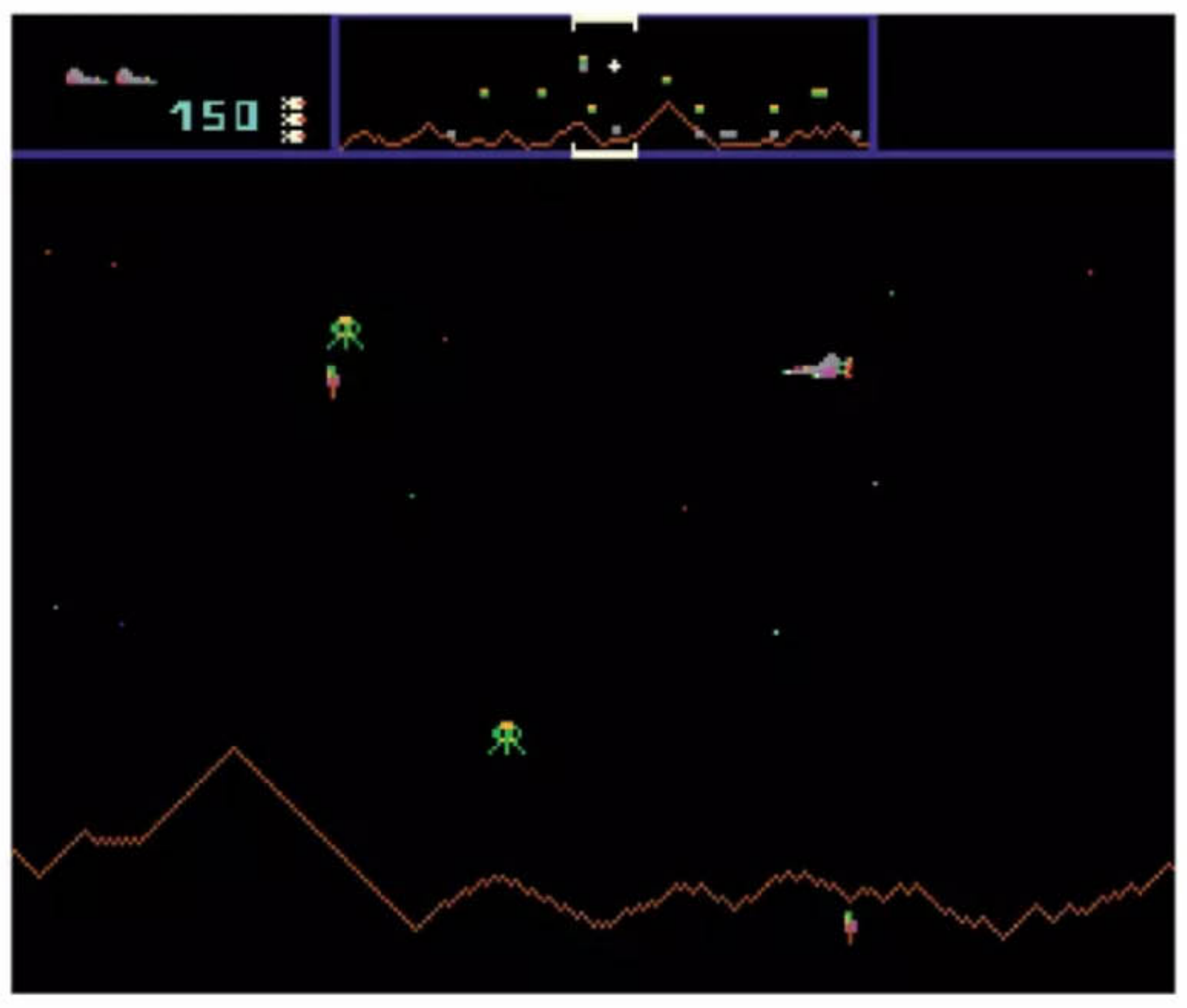
JAK AND DAXTER PS2

2 Beautiful, fun and compelling. On a sensual level, it's a spectacular achievement and definitely pushed the capabilities of the machine in question. And I never got tired of the music in it either. Doing that with a repetitive little theme that you're going to listen to for 30 or 40 hours is really quite something.



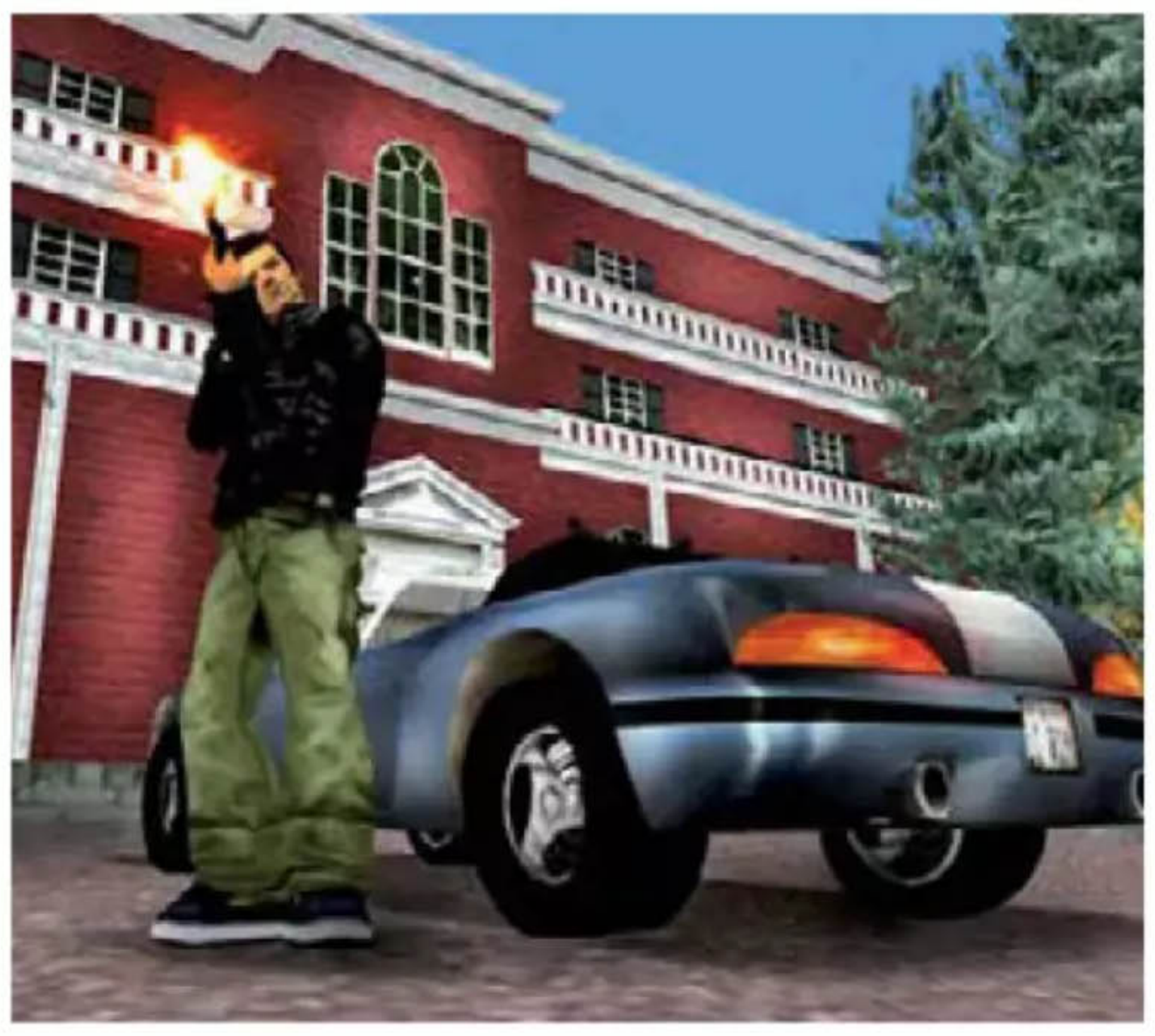
MILLIPEDE ARCADE

3 Lots of visceral action, lots of things happening everywhere and so well tuned. You can go for the quick win if you shoot the DDT and wipe out a whole millipede or if it gets all broken up and down at your level, you have that frenetic recovery element of cleaning up your mess you made and getting out of a tight spot. Both were really quite gratifying.



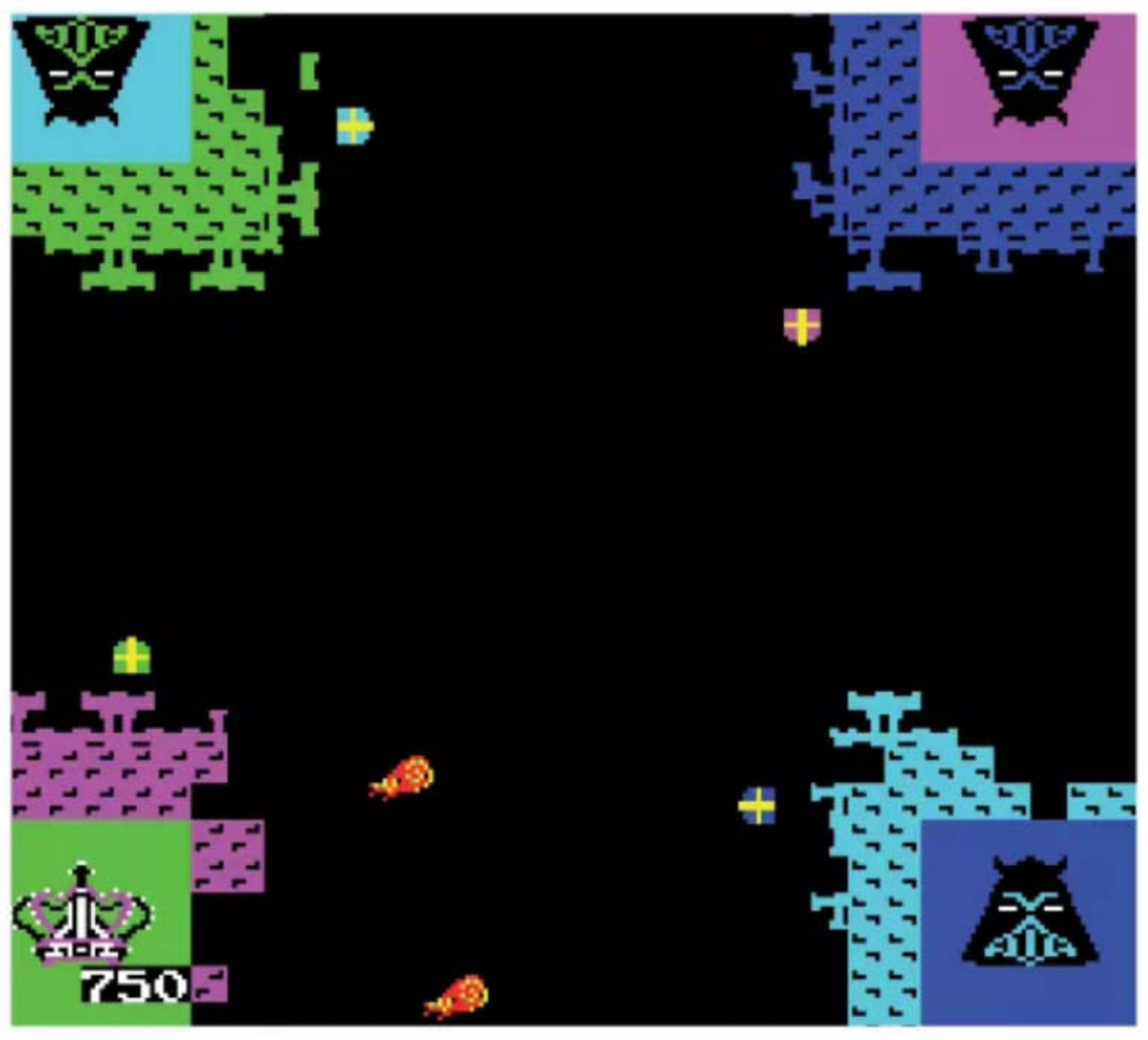
DEFENDER ARCADE

4 The first perfect videogame. *Asteroids* and *Space Invaders* were huge, but were uni-dimensional. This was the first multi-dimensional game. There were more threats and objectives than just cleaning up your plate. There were styles of play. It was the first game to really generate meta-conversations – people would talk about their strategies.



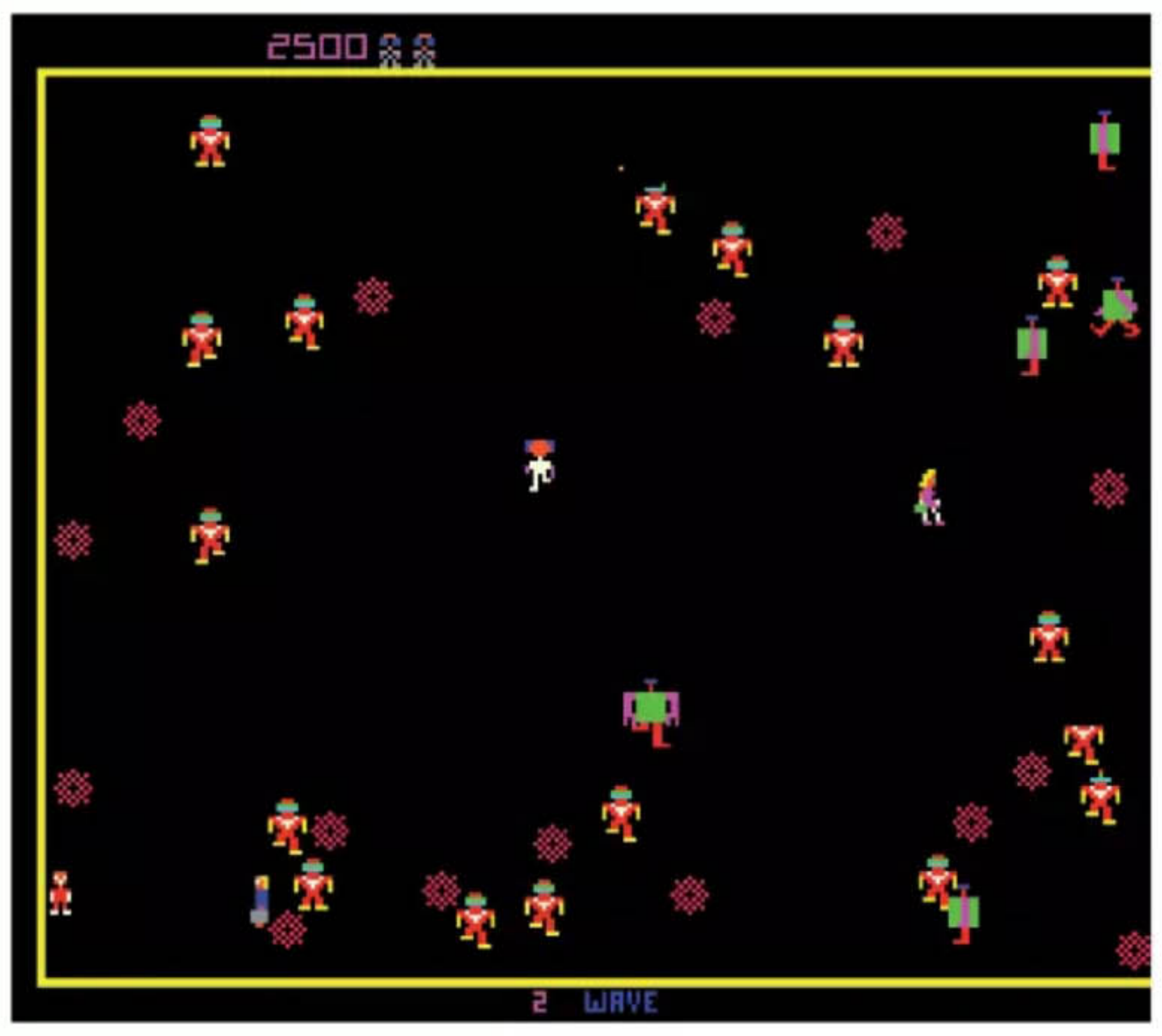
GRAND THEFT AUTO 3 PS2

5 One of the most significant videogames. It was the first to use 3D space and create a whole world. A triumph of videogame design and a bridge point between traditional gaming and a virtual reality experience. You were inside the game – you could learn from its logic. *Defender* gave you multiple approaches but *GTA3* did it on crack.



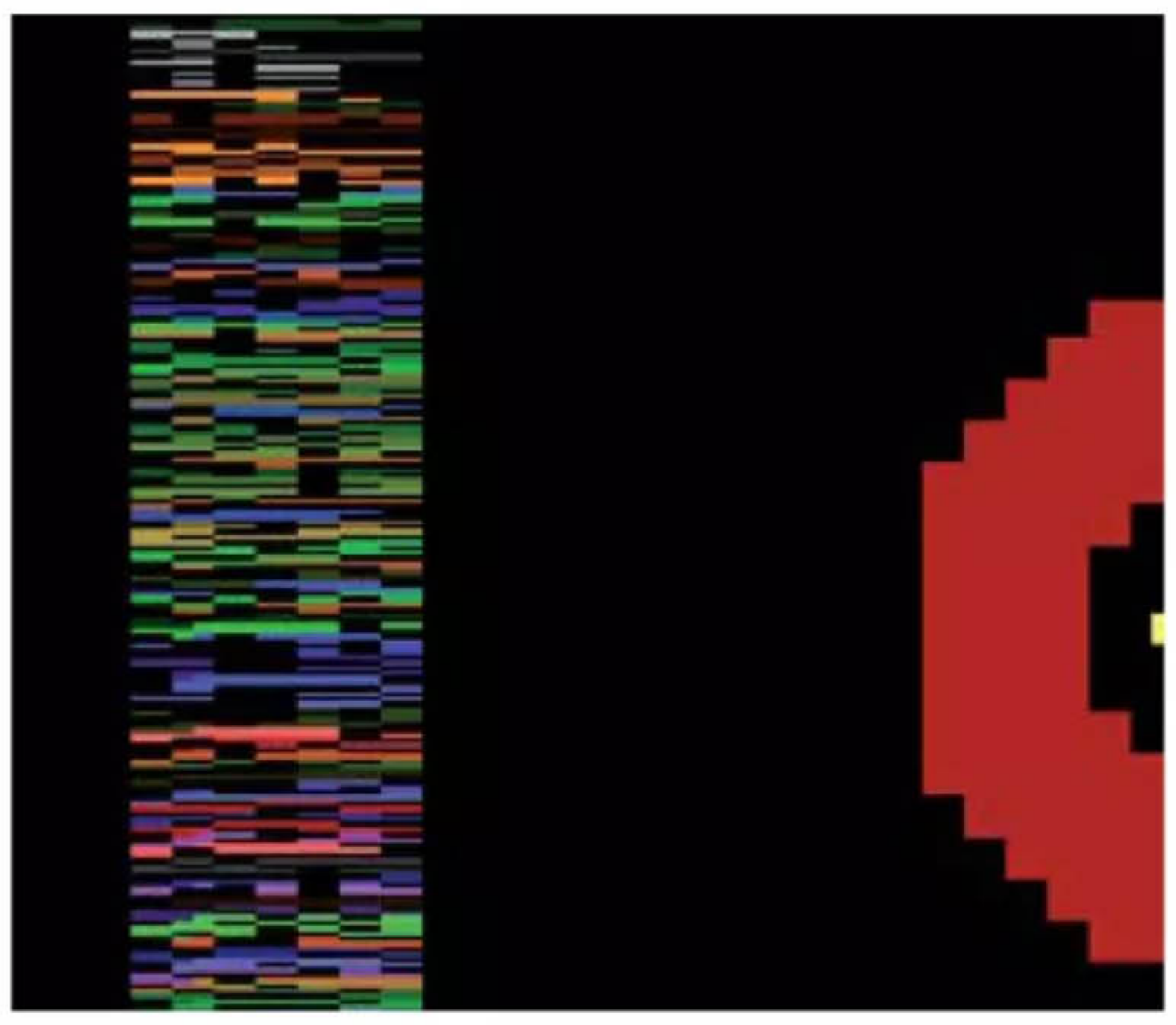
WARLORDS ARCADE

6 The first really great multi-player game – definitely a party game that engaged people who were playing and watching along too. Fun, simple and so well executed. Carla Meninsky did the VCS conversion and she's a wonderful woman. Clever, witty and bright, but she totally walked away from the industry after Atari Inc. She was so incredibly cool – she [worked on] *Star Raiders*!



ROBOTRON ARCADE

7 Eugene Jarvis is probably the best game designer ever and this is just outstanding. There are very few games that can generate this intensity and involvement. Now you have my triathlon. Everyday at Atari, I had to get over 100K on *Millipede*, *Defender* and *Robotron* before I started work and this was always the toughest – I suffered from *Robotron*-elbow regularly.



YARS' REVENGE ATARI VCS

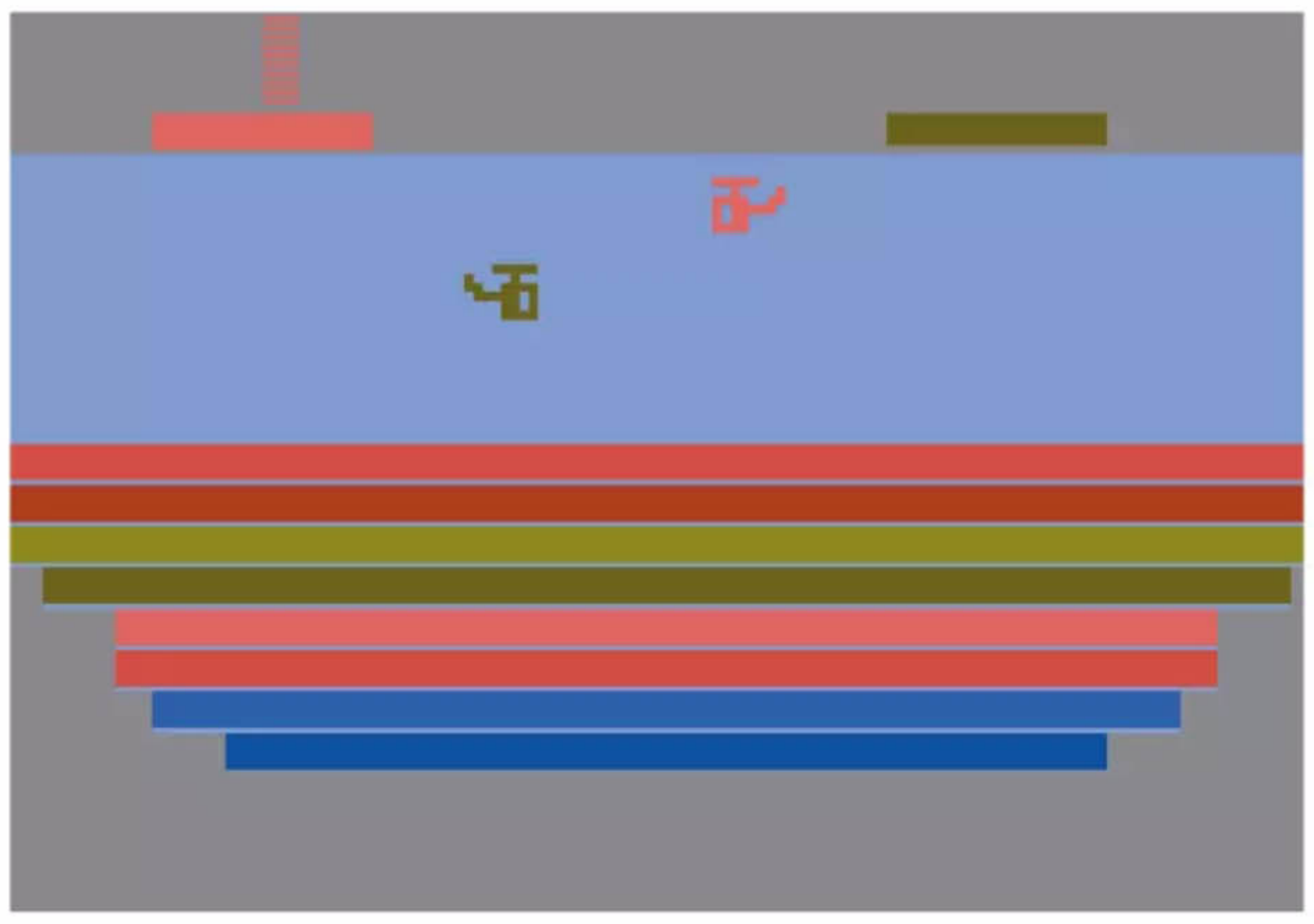
8 I'm not in any way ashamed to choose this. I need it with me. It embodies so much of what my objectives were at the time of producing this game and what I enjoy in life every single day. Wonderful things came to me because of Yars' and its continuing legacy and I could create no bliss without it.

DAVID CRANE

HE'S THE DESIGNER OF THE BESTSELLING GAME ON ONE OF THE MOST ICONIC VIDEOGAME CONSOLES IN HISTORY, AND CO-FOUNDER OF THE LARGEST AND MOST SIGNIFICANT VIDEOGAME COMPANY TO COME OUT OF THE EIGHTIES. JOIN US AS WE LOOK BACK ON DAVID CRANE'S AMAZING CAREER

SELECTED TIMELINE

1978: OUTLAW
1978: CANYON BOMBER
1979: SLOT MACHINE
1980: FISHING DERBY
1980: DRAGSTER
1981: LASER BLAST
1981: FREEWAY
1982: PITFALL!
1982: GRAND PRIX
1983: THE ACTIVISION DECATHLON
1983: PITFALL II: LOST CAVERNS
1984: GHOSTBUSTERS
1985: LITTLE COMPUTER PEOPLE
1986: TRANSFORMERS: THE COMPUTER GAME
1987: SKATE BOARDIN': A RADICAL ADVENTURE
1988: SUPER SKATEBOARDIN'
1989: A BOY AND HIS BLOB: TROUBLE ON BLOBOLONIA
1990: RESCUE OF PRINCESS BLOBETTE
1991: BART SIMPSON'S ESCAPE FROM CAMP DEADLY
1992: DAVID CRANE'S AMAZING TENNIS
1993: T*O*Y*S
1994: HOME IMPROVEMENT: POWER TOOL PURSUIT
2009: ARCADE BOWLING
2009: TEN PIN CHAMPIONSHIP BOWLING
2009: BOARDWALK GAMES
2010: IRON HORSE



» *Canyon Bomber* was one of David's earliest Atari 2600 games.

Following a telling company memo and a life-changing game of tennis, David Crane decided to leave his job at Atari in 1979 in order to form Activision with fellow Atari coders Larry Kaplan, Alan Miller, Bob Whitehead and music industry exec Jim Levy. Here this talented collective of people aimed to create original, high quality VCS titles, award programmers recognition for their work (something which wasn't recognised at Atari) and, most importantly, separate the software business from the hardware.

The ramifications of this can still be felt today, as Activision remains the biggest publisher in the videogame industry, responsible for huge yearly franchises like *Call Of Duty*, *Prototype*, *Guitar Hero*, *Tony Hawk*, and more recently, Skylanders, which is based on the popular Spyro series. Having recently completed his 68th published game for Apple's iPhone, David chats to Stuart Hunt about his prolific career in the videogame industry and gets him to share his thoughts on the new-generation Activision…

So David, what did you want to do when you were still at school? Was it a lot different to what you ended up doing?

There were three main factors driving me through my early years at school. First, I was always fascinated with technology and engineering. I found it difficult to imagine that anyone could look at a television screen, for example, and not want to understand how a picture could be plucked out of thin air and 'painted' onto the back surface of a glass tube. By the time I was 12 years old I knew the answer to that question and thousands of other technological mysteries. Second, when we are young we don't have the financial resources to simply buy something to fill a need, so I became an inventor. Using junk from around the garage, or parts from an Erector Set, I tinkered in the basement at all hours (when I was supposed to be studying). Some examples include:

When our small town first opened a community swimming pool I spent so much time there that I sunburned my shoulders to a crisp. I built a foot-pedal-operated mechanism attached to the wall that sprayed my shoulders with sunburn spray.

For a science fair I designed and built an unbeatable Tic-Tac-Toe machine using nothing but rotary switches and lights. Sadly, it went up in smoke the night before the competition.

When I received an old, used black and white television as a birthday gift I dismantled it so that I could have the channel tuner near my bedside and the TV in a cabinet on my wall.

To impress the neighbourhood I fashioned a 'laser' that, in a flash of light, could ignite a match at the far end of a workbench (a loop of Nichrome wire around the match head completed that illusion).

Finally, my mother, an artist trained in a number of painting styles, made sure I experienced the arts. I took watercolour painting classes and such, but I never developed much of an interest. A painting took too long to perfect, and when you were finished with it you only had a single copy. So besides getting a little right-brain training I also learned the value of mass production.

Given these factors I was certain that I would end up designing household gadgets to improve the quality of people's lives. I had the technological skills to make almost anything work, and I had just enough aesthetic training to understand the need for look and feel. Ironically, videogame design was even a better fit for that combination of skills. But as I was growing up there was no such thing as a videogame, so how could I know?

> "TO IMPRESS THE NEIGHBOURHOOD I FASHIONED A 'LASER' THAT IN A FLASH OF LIGHT COULD IGNITE A MATCH AT THE FAR END OF A WORKBENCH"
>
> DAVID CRANE

Tell us about your first experience with a home computer…

Home computers did not arrive until I was in college. But mainframe computers from IBM could be found in some businesses, and I had a lucky connection. I was in the Boy Scouts, and my Scoutmaster worked in data processing. On a visit to his office I became fascinated with the equipment. I asked to be one of the first to attempt to earn the newly created Computer Merit Badge. Through his help and access to his facility, I learned the Hollerith code for punched cards (I still remember that code), and got a good grounding in the technologies involved. A few years later, in high school I attended a computer programming extension campus. I travelled by bus every morning to a nearby city, studied computers for three hours, and returned to my normal school for the afternoon. I was one of the few people in

the Seventies to leave high school programming computers in three languages.

And what was the first game you actually encountered there?
My parents bought the first Magnavox Odyssey home game console. This unit displayed squares of light on the screen with no graphics. Magnavox supplied coloured overlays that you would stick on the TV screen to make different games. I have to admit that I was bored by the rudimentary games, but I was fascinated by the potential of the technology [it offered].

When did you first think to yourself: I reckon that I could make myself a career out of this videogame lark?
It would be years before I thought of making a career in videogames. My head was brimming with inventions. Tired of resetting digital clocks after a power failure I invented a clock that derived its display by communicating over a power-line-interface with a master clock. To accompany me as I learned to play the guitar I created a programmable drum machine (I even tried to market that one through one of those late-night infomercial invention marketing companies). I even designed a 3D TV using a flat, spinning phosphor target inside an evacuated sphere.

I had far too many things to invent – who had time for games?

What did your parents think about you joining the industry, which was still relatively new at the time?
My parents helped me move to Silicon Valley after college. They looked around and saw ten high-tech businesses per block, and they knew I would be fine. To them Atari was just another computer business (my Mom was soon even happier, because I made her a Slot Machine game that she could play at home any time, day or night).

So what jobs did you do before you ended up working at Atari?
My first job in the Valley was as a technician at National Semiconductor. I had worked for a couple of years at school as the lab professor's technician. When he created new lab projects for students I had to build them first and help tweak them for the class. I also built my first computer in college – a machine that plays *Tic-Tac-Toe* (which still works).

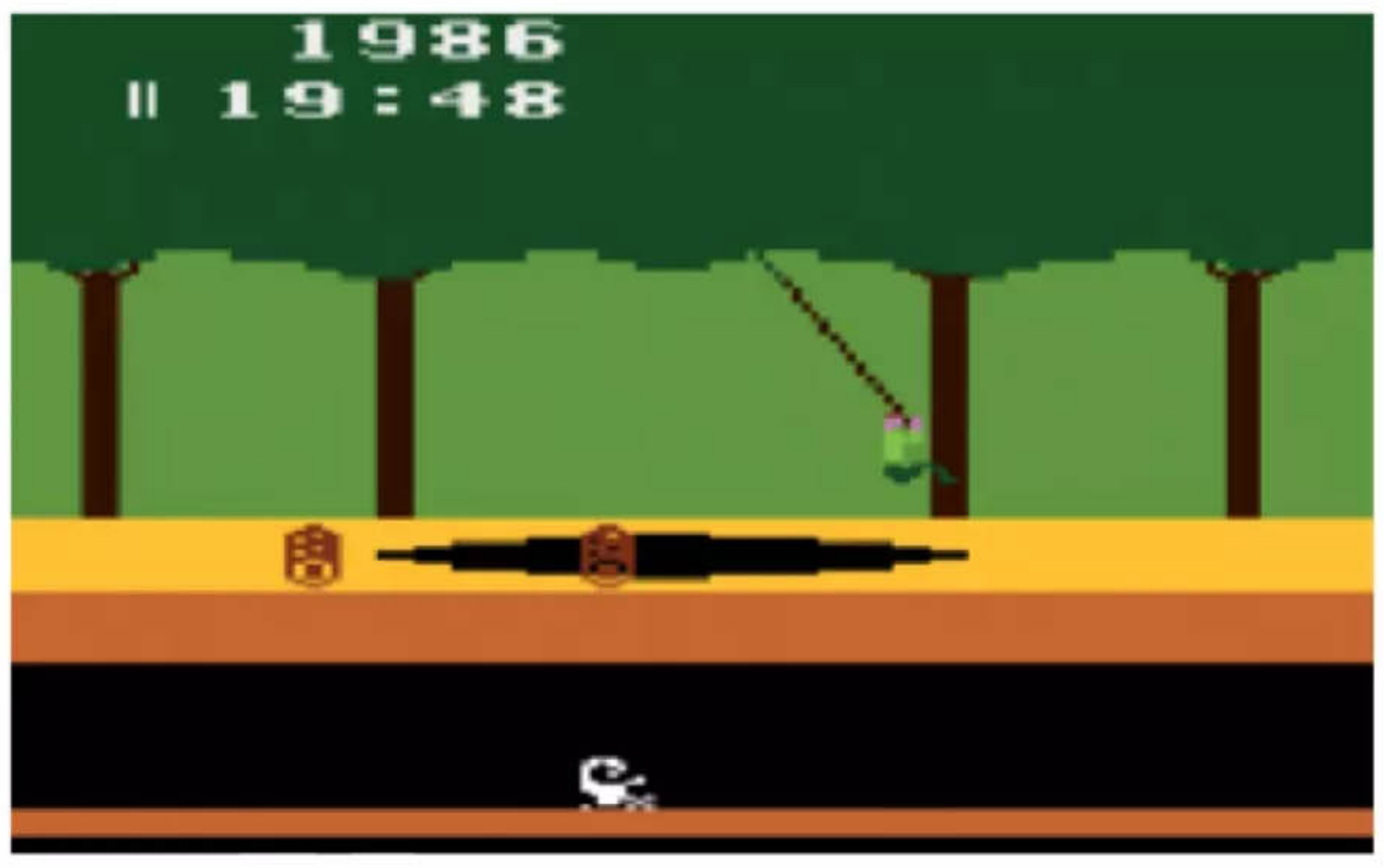
With all of the experience I had working with digital circuits, I recognised that there were some fields of electronics with which I had no practical experience. I took the job at National working with linear integrated circuits, stunning my advisors (that is as far away from computer chips that you can get). But I had a plan. To be the inventor I wanted to be, I needed to be proficient in many areas of electronic design. That job was just the next step in my career development.

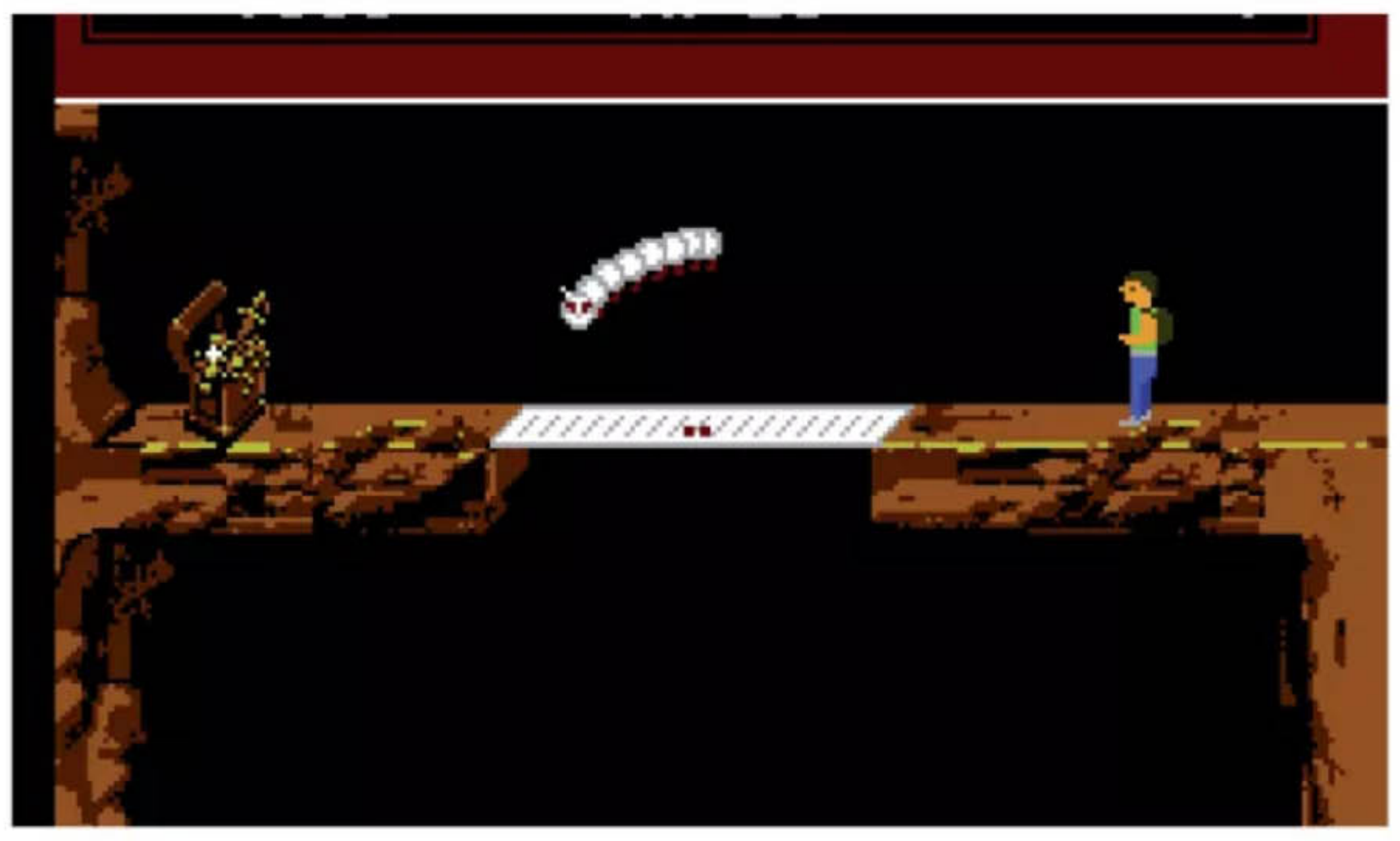
Can you tell us what was it like working at Atari at that time?
I wasn't sure I would actually like programming games. My first love has always been designing electronic circuits, and this would be only programming. As it turned out I still got my fill of

FIVE TO PLAY

PITFALL! ATARI 2600

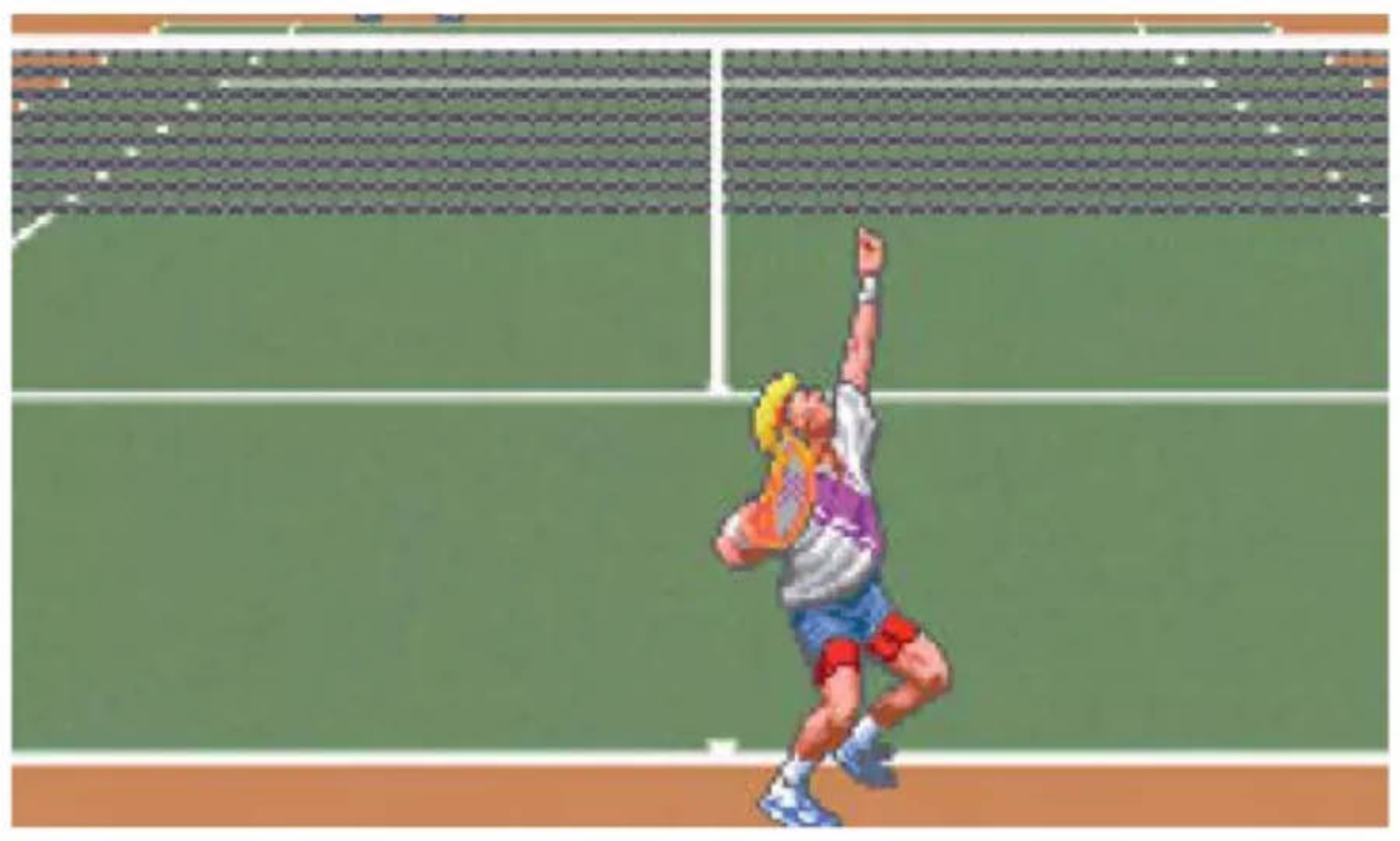
1 The concept may have taken David ten minutes to think up, but that didn't stop *Pitfall!* becoming the bestselling 2600 game of all time, selling over 4 million copies on the console alone. The game saw an adventurer named Pitfall Harry on a mission to find 32 pieces of treasure while having to negotiate various environmental hazards and deadly creatures. *Pitfall!* was praised for its quality visuals, slick gameplay and animation, and quickly gained interest from VCS owners on its release owing that there was nothing else like it on the machine. The game's popularity and success helped to bring David and Activision immediately to the fore, and in the following year a sequel, *Pitfall 2: Lost Caverns*, was released. The follow-up was notable for featuring scrolling and for expanding and refining areas of the game.





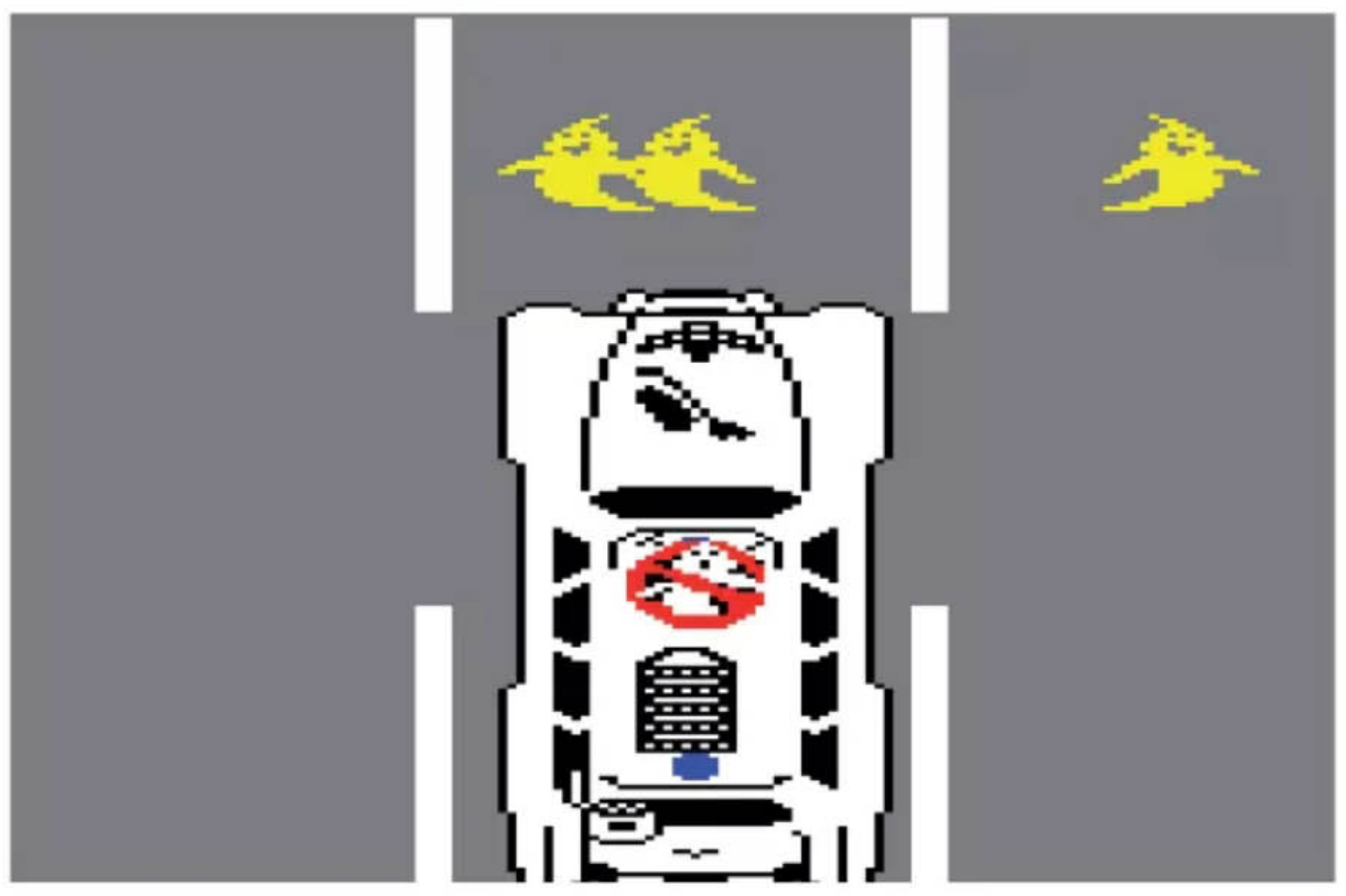
A BOY AND HIS BLOB: TROUBLE ON BLOBOLONIA NES

2 After finishing *Pitfall 2*, David left the action/adventure game genre for a while and didn't return to it until 1989 with the release of this quirky NES platformer. *A Boy A His Blob* is notable for its unique buddy system: the player controls the boy but is aided on their quest by a computer-controlled character named Blob, who can be fed jellybeans.



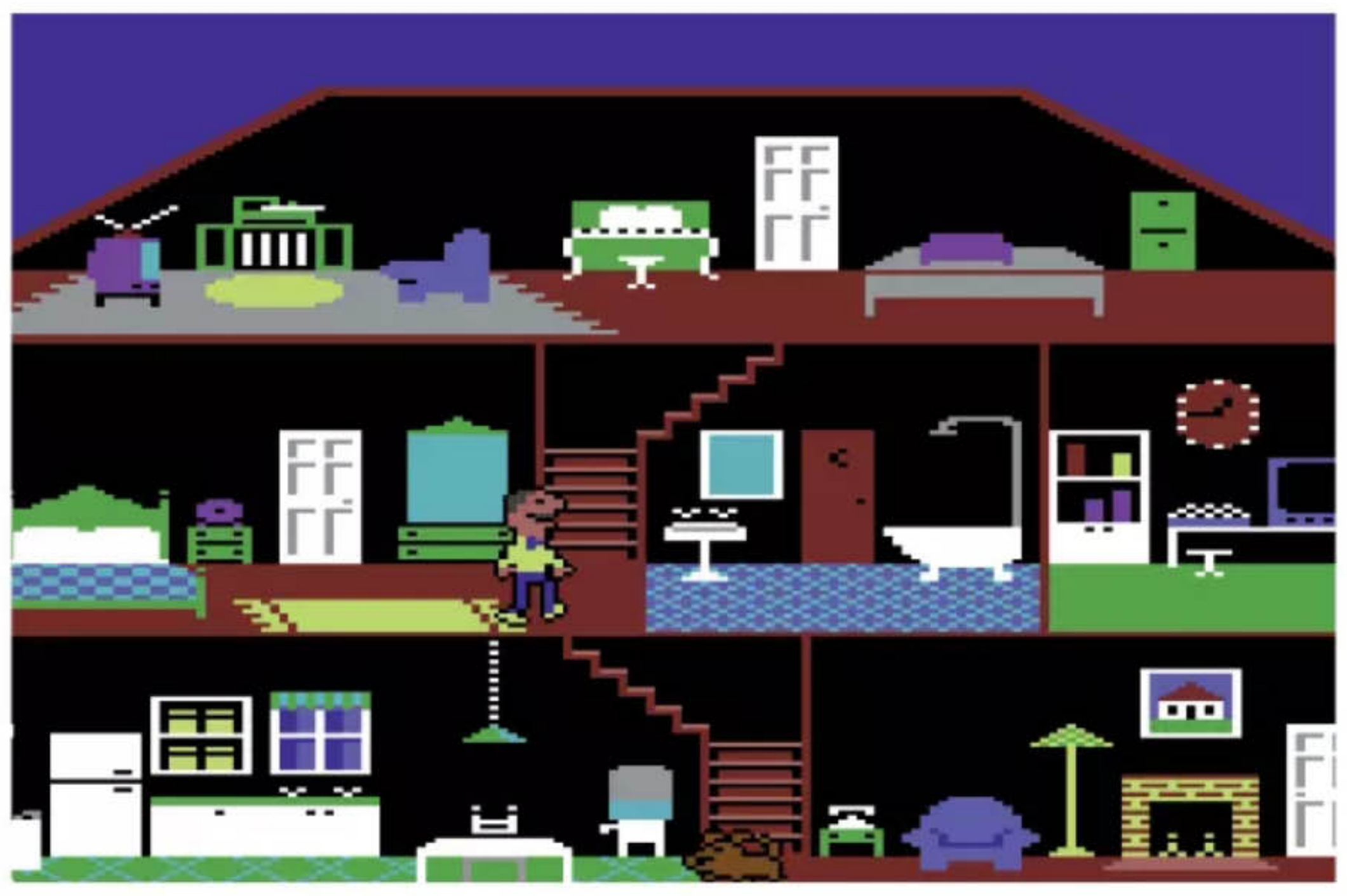
DAVID CRANE'S AMAZING TENNIS SNES

3 Given that David is a huge fan of tennis it comes as little surprise that he would decide to marry his passion for the sport with videogames. *Amazing Tennis* is notable for featuring a 3D court and an attention-grabbing perspective: the camera was positioned just behind the camera as opposed to above the court, which gave the game a more realistic feel.



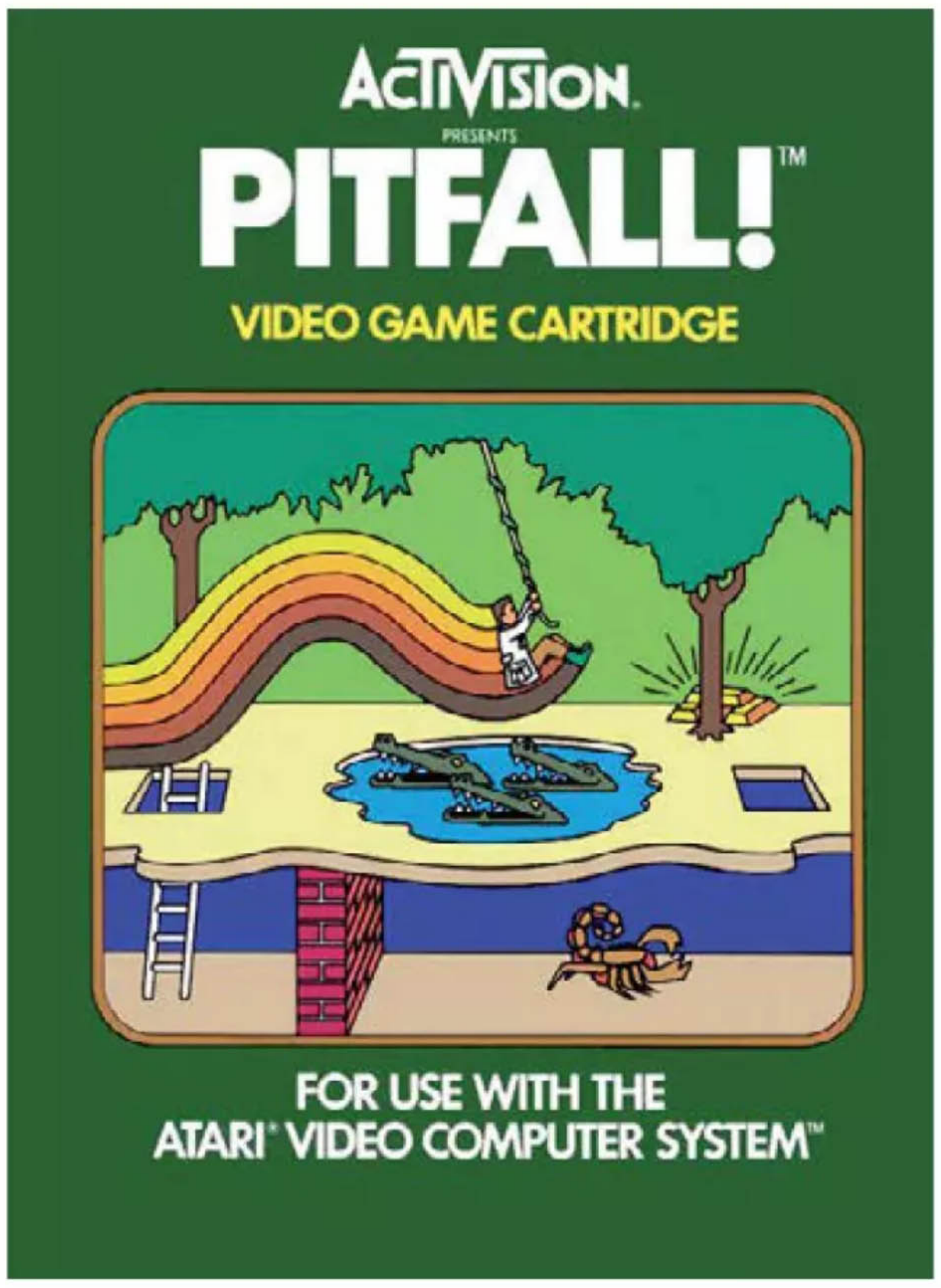
GHOSTBUSTERS COMMODORE 64

4 Only David Crane could turn the most successful comedy film of the Eighties into a business sim and still capture the magic of the movie so brilliantly. Activision's *Ghostbusters* plonked players inside the slime-covered boots of the eponymous team of paranormal exterminators. Starting out by purchasing your very own Ecto-1, you equipped your team with various gadgets before traversing the many blocks of New York City, busting ghosts until your inevitable date with Gozer.



LITTLE COMPUTER PEOPLE COMMODORE 64

5 Undoubtedly a precursor to the *Tamagotchi* and Will Wright's super-successful *Sims* series, the high concept behind Little Computer People caused quite a stir on its release. The original idea can be credited to artist/musician Rich Gold, who came to Activision with an idea to produce a software version of the Pet Rock. Activision invested thousands in the project, and David helped Gold refine the concept – adding the interactivity and communication element.



» *Pitfall!* is one of David's biggest games.

circuit design over the years, developing a number of electronic circuits to help make game design easier. But I found that I enjoyed microprocessor programming and game design.

The working environment in my first days at Atari was very rewarding. My co-workers were dedicated professionals working hard to advance the state of gaming. Nolan Bushnell would come by occasionally to see what cool thing we were working on – although his catch word was "neat". The hot tub parties in the lobby and drug use in the office was long past, which is good because I wouldn't have tolerated that. I was only there for two years before Atari lost its way. I got out and started Activision just in time.

How many games did you work on while you were at the company?
While at Atari I designed and programmed: *Outlaw*, *Slot Machine* and *Canyon Bomber/Depth Charge*. Then the Atari 800 computer needed software help so all of the original 2600 game designers stepped up and wrote the operating system for Atari's new line of personal computers.

So tell us about the genesis of Activision; how was it formed?
A lot went wrong at Atari in 1979, in spite of the fact that they were making $100 million per year selling videogame cartridges. They made a classic mistake, one that is repeated over and over in every business. They didn't follow rule number one: If you make your living on creative products, keep your talent happy.

Four of Atari's most successful game designers: Larry Kaplan, Alan Miller, Bob Whitehead and I tended to hang around together. One day we discovered that we four had created games that accounted for 60 per cent of Atari's $100M in game cartridge sales for the previous year. We were making less than $30K salaries.

When we asked Atari's new president (Nolan was no longer there) for a piece of the action, we were told 'You are no more important to the success of those products than the person on the assembly line who puts them together.'

We didn't agree so we left to form our own game publishing company. We met up with Jim Levy and together created Activision.

We've heard this story from other Atari developers. You must have felt tremendous satisfaction when you were finally given credit for the games you made…
That was a founding premise of the company. We started our own publishing house because we felt that people would like to know who authored their favourite game so that they could buy their next one.

What was really fun was going into the game store the day our first four games shipped. The owner of the store was just unpacking the boxes and looking at our pictures as we entered the store. He did a classic double-take.

When you co-founded Activision in 1979 did you ever anticipate it would become one of the biggest companies in the industry?
At the founding of the company, videogames were largely considered a fad. We certainly knew better. The videogame provided a way to interact with your TV, which promised a more immersive experience than either television or movies. And both television and movies had proven themselves to be more than just a fad.

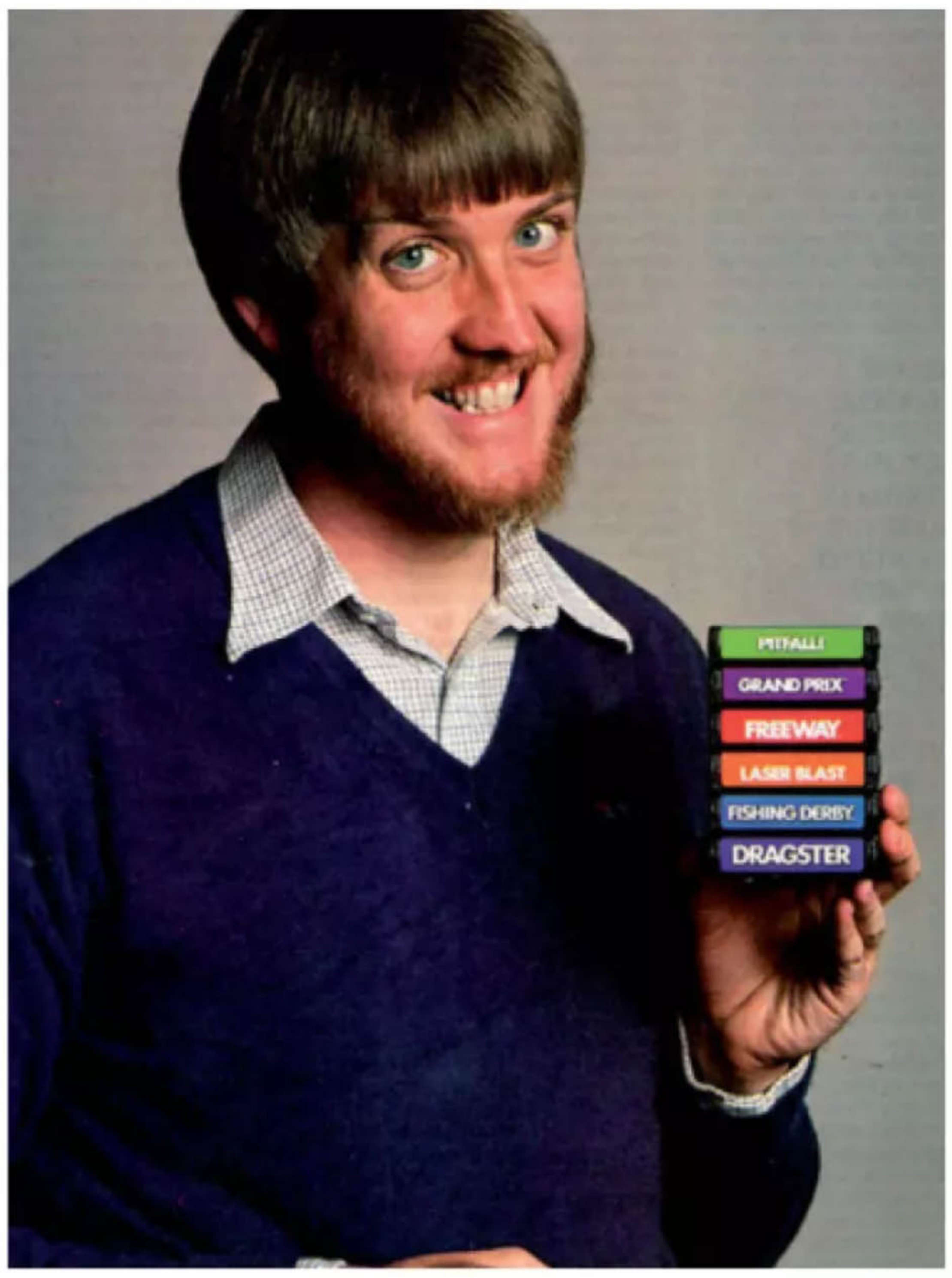
"I WAS ONLY THERE FOR TWO YEARS BEFORE ATARI LOST ITS WAY. I GOT OUT AND STARTED ACTIVISION JUST IN TIME"

DAVID CRANE

The Activision of the 1980s has very quickly became the biggest company in the industry. So we didn't have to long to wait to find that out. At one point a financial analyst made the case that Activision was the fastest-growing company in the history of American business. I think it is also great that the Activision of today has regained [a lot of] that dominance. The company's current management has done a great job of leveraging the Activision name and developing cutting-edge products that continue to keep it at the top.

What was the secret to Activision's success?
In the early days of Activision our primary focus was quality. We continued to work on a game until the whole group could say it's as good as it's going to get. Most times that meant a whole lot of rewriting and tweaking. And sometimes a game never reached that threshold and it was shelved.

Uncertain schedules played havoc with the sales and marketing folks, making it hard to predict when the next game would be coming. But after a while we got pretty good at predicting, and we were able to commit to a number of games from each designer (we just couldn't say what the game would be until it was finished).



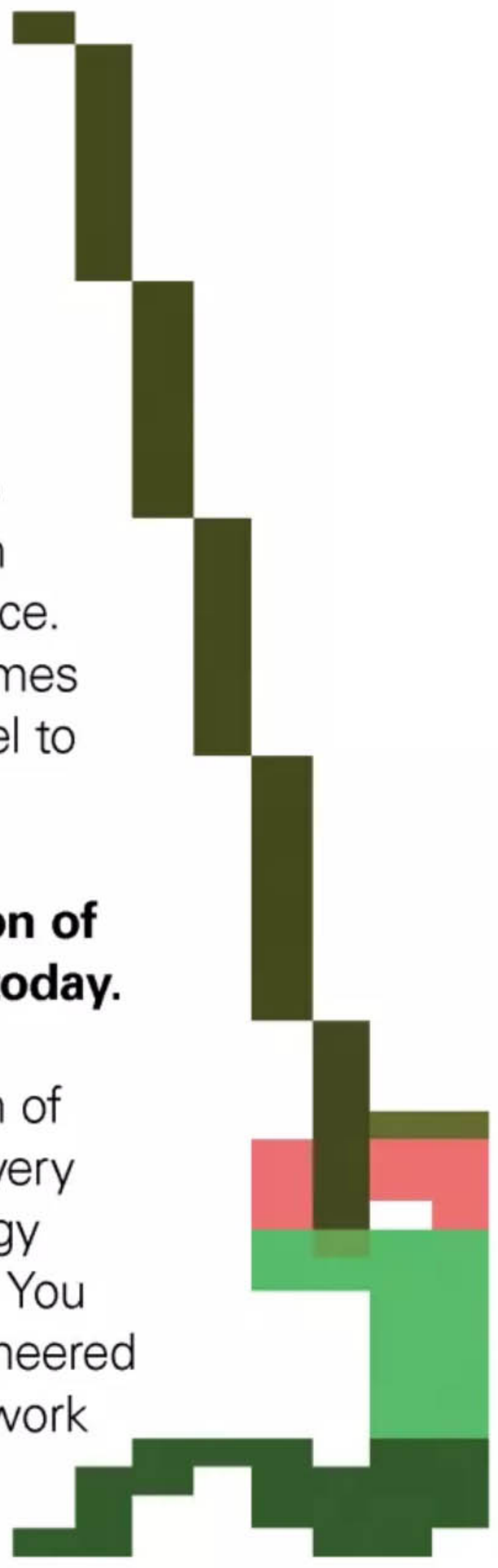
» David invented many things before designing games, including a programmable drum machine.

We were the small, upstart company so we couldn't let our players down. And we succeeded… People raved that each Activision game was better than the last, and far ahead of the competition.

Activision had always striven to create new IP instead of arcade ports. Why was this?
That was a sign of the times. The Atari 2600 was designed to bring Atari's arcade games to the home. A lot of the game development time at Atari was taken up making home versions or their arcade games. Activision didn't own any arcade hits, so we had to create new games from scratch. Of course, that was more fun anyway.

The market was pretty small at that time as well. When there are only two dozen games on the shelf, a buyer can study all of them before making a choice. Once there were over hundreds of games it made sense to attach a pre-sold label to a game.

And how do you think the Activision of yesterday compares to the one of today. Is it any different now?
There is no comparison. The Activision of the Eighties was a research project. Every aspect of the business, from technology through marketing had to be invented. You could fill a textbook with the ideas pioneered by the over-achievers who flocked to work at Activision. And many of those ideas are still in common use today.



Today's Activision is a highly evolved publishing business. They are very good at what they do. But to try to compare the two companies would be like comparing America's founding fathers to Washington DC of 2010.

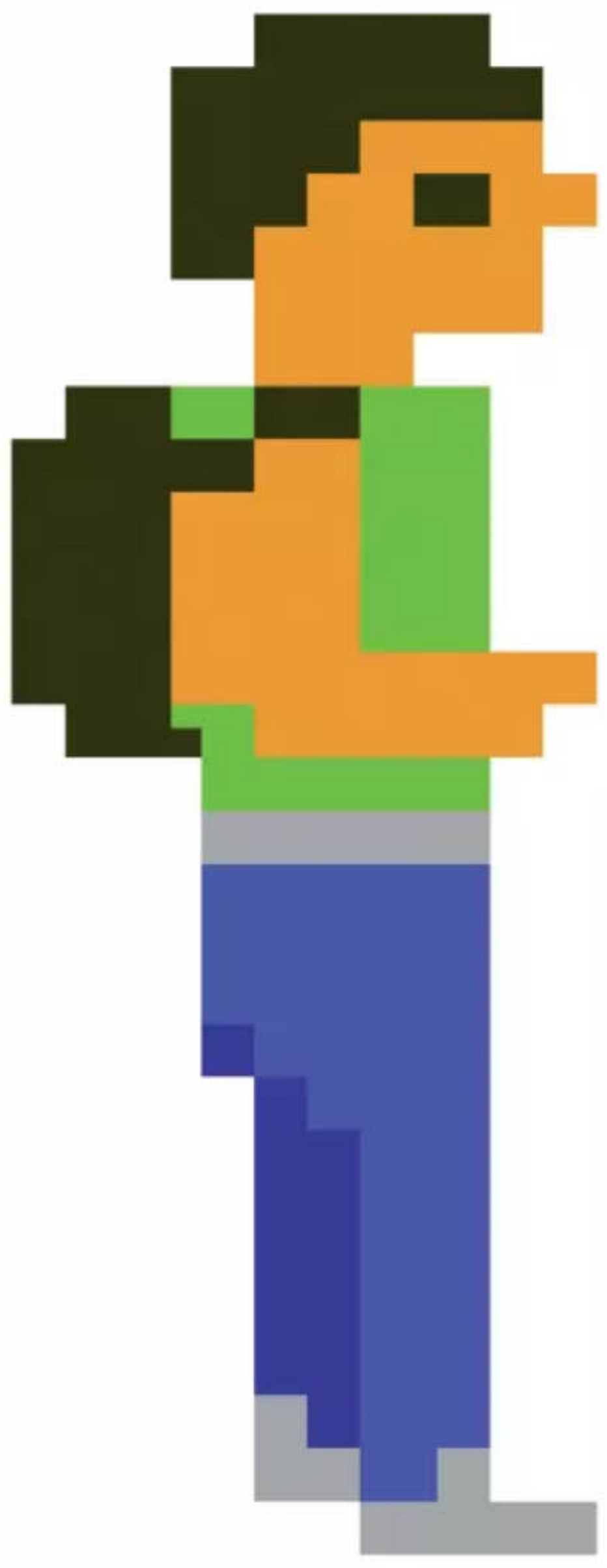
***Little Computer People* was one of your more innovative games. How did it come about?**

The germ of the idea came from an artist/musician by the name of Rich Gold. He wanted to make a software version of the Pet Rock. He raised some money and had some early programming done before showing it to Activision. I saw the start he had made and was intrigued. Activision covered all his expenses and spent several hundred thousand dollars more on the project, including almost a year of my time.

> "IF MY NAME IS ON A GAME, YOU CAN BE SURE THAT I WROTE THE MAJORITY OF THE CODE"
>
> DAVID CRANE

Rich's idea had a flaw. The beauty of the Pet Rock was that you could sell for something that cost nothing for ten dollars, but only if you surrounded it with a great story. *Little Computer People* (which was originally called Pet Person) was the opposite. Its cost was astronomical, so it had to be sold at a high price, and therefore it had to provide some real entertainment value.

I added interactivity, communicating both to and from your LCP. Our marketing department surrounded it with a compelling story about gremlins living in your computer, etc. I worked with the production department to figure out how to make every disk unique, each with its own special LCP. It was one of the most demanding software projects developed in the 1980s. We weren't sending a man to the moon or anything, but we created a convincing life form inside the C64.



Why do you think the *Pitfall!* franchise has proven to be so popular with gamers over the years?

First, the platform game genre was the most expandable style of game found on the early consoles. A game designer could take the player to any world that he could envision (as long as the console could display that vision).

Second, even as the first of its genre, *Pitfall!* provided a lot of game play. Within the limits of a 4KB ROM, it was rare to have more than a few game screens. The technical trick I pioneered for that game – using an 8-bit polynomial counter to define each screen – provided for more than 200 screens of game play.

Finally, in gaming, each sequel has to be bigger and better than the last. So when you start with an original game that has so much more in it than other games, each sequel is forced to be that much better.

Pitfall! represented a big leap in gameplay. And each sequel had to be even better, so the whole body of work tended to stay ahead of the curve, keeping new audiences happy while remaining true to the spirit of the original.

Which of your games are you most proud of and what makes it special to you?

I recently completed my 68th published game, and each one has something about it that I consider special. Sometimes the part that makes me proud is a unique game play feature, and sometimes it is an extremely esoteric programming technique that might take several pages of explanation. To list a few:

Most obscure display technique: Atari 2600 *Dragster* for the moving 48-bit dragster kernel.

Best overall use of the Atari 2600 hardware: *Grand Prix* for the size and colour of the car, and the edge treatment of the disappearing cars.

Image compression/decompression: C64 *Transformers*, for run-time rendering of two-dimensional textured parts for its excellent transformation animations.

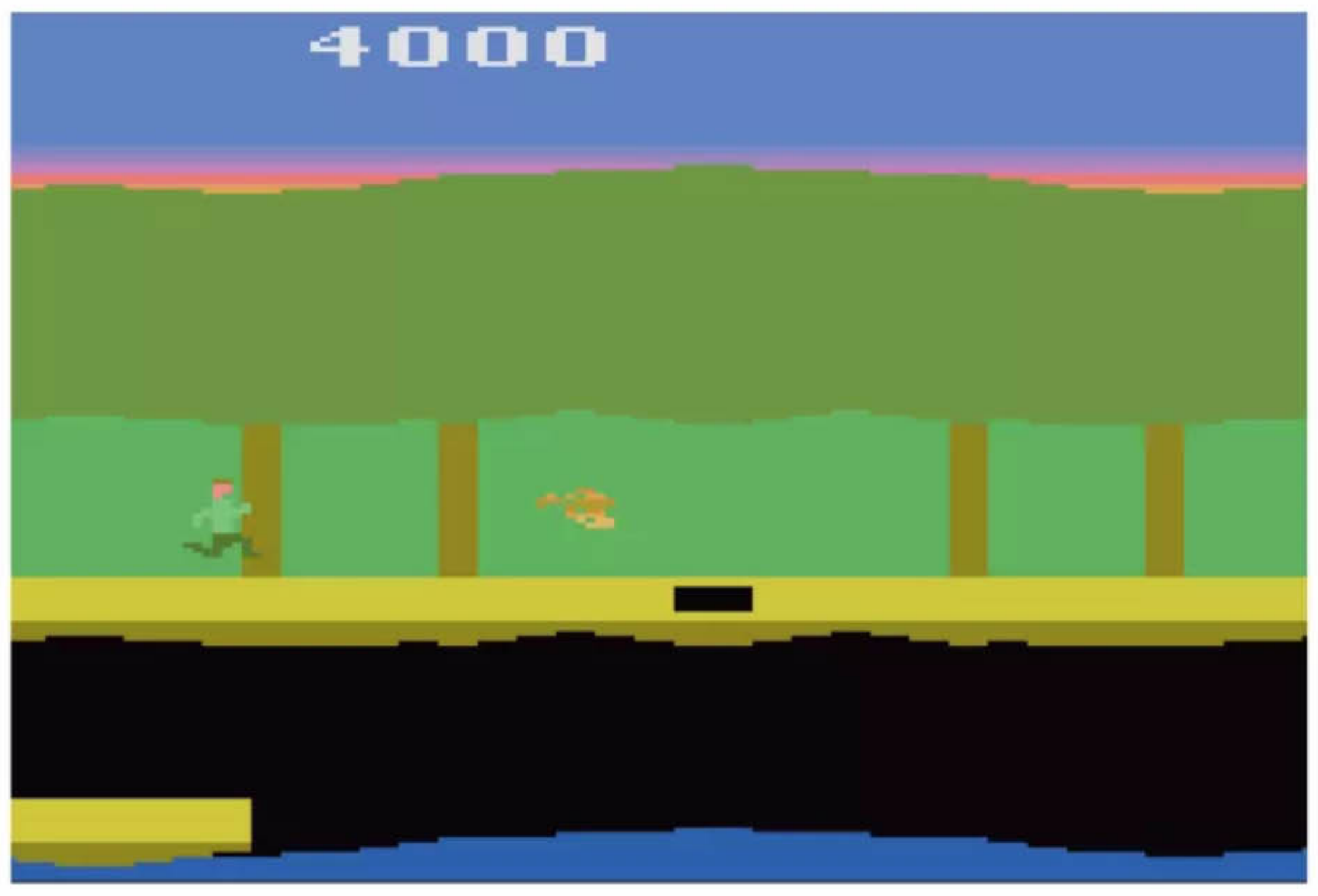
Digitised speech player: C64 *Transformers* again, for custom disk driver pulling real-time audio data from the flip side of the disk.

Best computer opponent: *Candystand Billiards*, computing bank shots through the use of phantom pocket projections.

Screen data generation: *Pitfall!* 8-bit reversable polynomial counter.

Are you still in touch with any of your former Activision co-founders?

We will run into each other occasionally, particularly at classic gaming events. But despite the fact that we all still live in the Bay Area, it is a big place and we have spread out pretty far.



» After impressive Atari 2600 owners with the excellent *Pitfall!* David created a sequel, which continued to push Atari's machine.

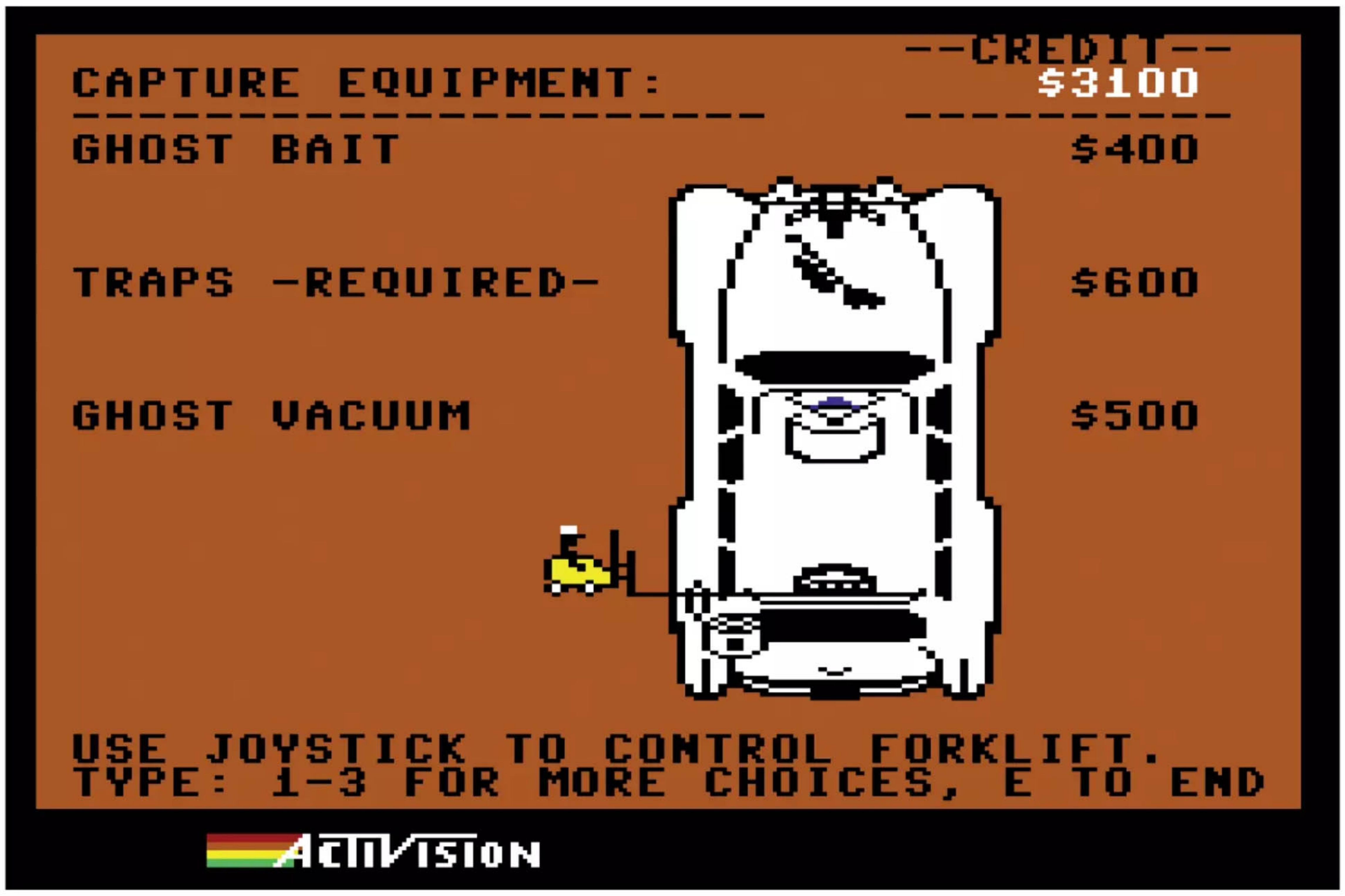
Tell us a little about the forming of Absolute Entertainment; why did it come about?

When the videogame business crashed in 1983, Garry Kitchen and his co-workers in Activision's eastern design centre spun off to form Imagineering Inc. to do contract game development. They developed the Simpsons games for Acclaim, and became the largest North American developer for Nintendo NES games.

After a few years of success as developers they decided to also publish games, creating Absolute Entertainment as a brand. Garry contacted me to help to create and expand a line of games for Absolute, and before long I joined the company full time and he and I were working together again.

Were you still coding games then?

If my name is on a game, you can be sure that I wrote the majority of the code in the game. I find



CAPTURE EQUIPMENT: --CREDIT--
$3100

GHOST BAIT $400

TRAPS -REQUIRED- $600

GHOST VACUUM $500

USE JOYSTICK TO CONTROL FORKLIFT.
TYPE: 1-3 FOR MORE CHOICES, E TO END

» Solving the problem of a short turnaround, this and the driving section of *Ghostbusters* were taken from a game Activision already had in production titled *Car Wars*.

that programming is the best way to guarantee that a game will meet my standards. It is the program that breathes life into the characters and gameplay.

That often means learning a new game system or a new programming language, but that is the price I have to pay to keep control. I wouldn't have it any other way.

Why did you decide to close the company in 1995? And how difficult a decision was that?
The videogame business runs in cycles. I have been in the business for 33 years, and over that time there have been a number of boom and bust periods. Absolute ran into a bad patch in the business and couldn't sustain operations. The cost of ROM cartridges from Japan, coupled with heavy-handed retailers squeezed game publishers to the point that they could no longer make a profit. With ROM cartridge games, a publisher had to order goods far in advance. If you ordered too many you would be stuck with games you couldn't sell. If you ordered too few you would be giving up profits. It was painful to close down Absolute, but the same was happening to small publishers all around the world.

And it was then that you set up Skyworks Technologies. Tell us a little about it…
After Absolute, Garry and I decided that we would stay away from a business that had inventory risk. We decided to treat the internet as a game platform, and we began designing games that could be played in a browser. In 1995, people had not yet become comfortable buying anything online – if you remember, people were terrified that their credit card information would be stolen. So we had to come up with a new business model.

We created what would later be known as Advergaming. People weren't shopping online, but they were browsing, and companies were trying to get the attention of the casual internet user. There is no better way to do that than to give people free games to play. So we developed games and licensed them to companies to put on their web sites. It made for a three-way partnership: we got paid for making games, people got to play games for free and advertisers could draw people to their web sites. It worked a lot like the early days of commercial television with sponsored shows.

Tell us about Candystand…
The Candystand was Advergaming applied to a dedicated gaming site. The Lifesavers Candy Company spent a lot of money on brand promotion. For the Candystand we took a small percentage of their promotions budget and built a place to play games. Lifesavers brands would sponsor the games as if they were outside advertisers. Skyworks provided dozens of brand-new games that could only be played on the site, generating as many as 80 million game plays per month.

The Candystand delivered the lowest cost per brand impression of any internet advertising method. In other words it was the most successful form of internet advertising in that decade.

> “IF MY NAME IS ON A GAME, YOU CAN BE SURE THAT I WROTE THE MAJORITY OF THE CODE IN THE GAME”
>
> DAVID CRANE

And your collaboration with ESPN… how did that come about?
A number of times over the years, Skyworks worked with ESPN to provide games and promotions. Eventually ESPN decided to hand over the reins of its gaming site. We created a special ESPN game site similar to the Candystand. But in this case they sold advertising space to other companies. This was a moderately successful arrangement, only limited by the learning curve of their salespeople who could never quite understand the difference between sponsorship and advertising.

You later moved into the iPhone market and have been doing quite well in it. What do you think of the iPhone as a gaming device?
I love the iPhone as a gaming device. I love the iPad even more. For years we have waited for the cell phone that could play games, and the iPhone is the first real candidate. But you don't need me to tell you that – just compare the number of games available for the iPhone to any other handheld device.

So why did you then decide to set up AppStar Games? What was the appeal?
Garry and I sold Skyworks in 2007, but we agreed to continue to work with the company for a period of time. In October 2009 we parted company.

I have been designing games since 1977, so it is only natural that I will continue to do so. At AppStar Games we plan to publish games for the iPhone, iPad and various other handheld devices.

BY THE NUMBERS

David's first game was *Outlaw*, it was released in **1977.**

Pitfall! featured over **200** screens of gameplay.

Pitfall! quickly became one of the best-selling Atari 2600 games ever, with over **4 million** copies of the game sold on the console alone.

David has recently put the finishing touches to his **68th** published game.

A Boy And His Blob featured **14** different flavoured jellybeans that could be giving to the Blob and grant him special powers.

The concept behind *Pitfall!* took David around 10 minutes to think up, but it took him around **1,000** hours of programming to complete it.

For most of David's adult life he played tennis with an national tennis rating of **5.0.** Very few reach this level, and the best rating you can achieve is **7.0.**

There are **8** games in the *Pitfall!* series, including an arcade version of *Pitfall II* developed by Sega. David has only worked on **3** *Pitfall!* titles.

» Despite leaving Activision in 1986, David still occasionally sees the other co-founders.

What do you prefer David? Managing or programming games?

I still program games every day. The only distinction I might make is that I am not just a game programmer. We use the term 'game designer' to describe a programmer who also figures out how to put the fun into the game. That is what I do.

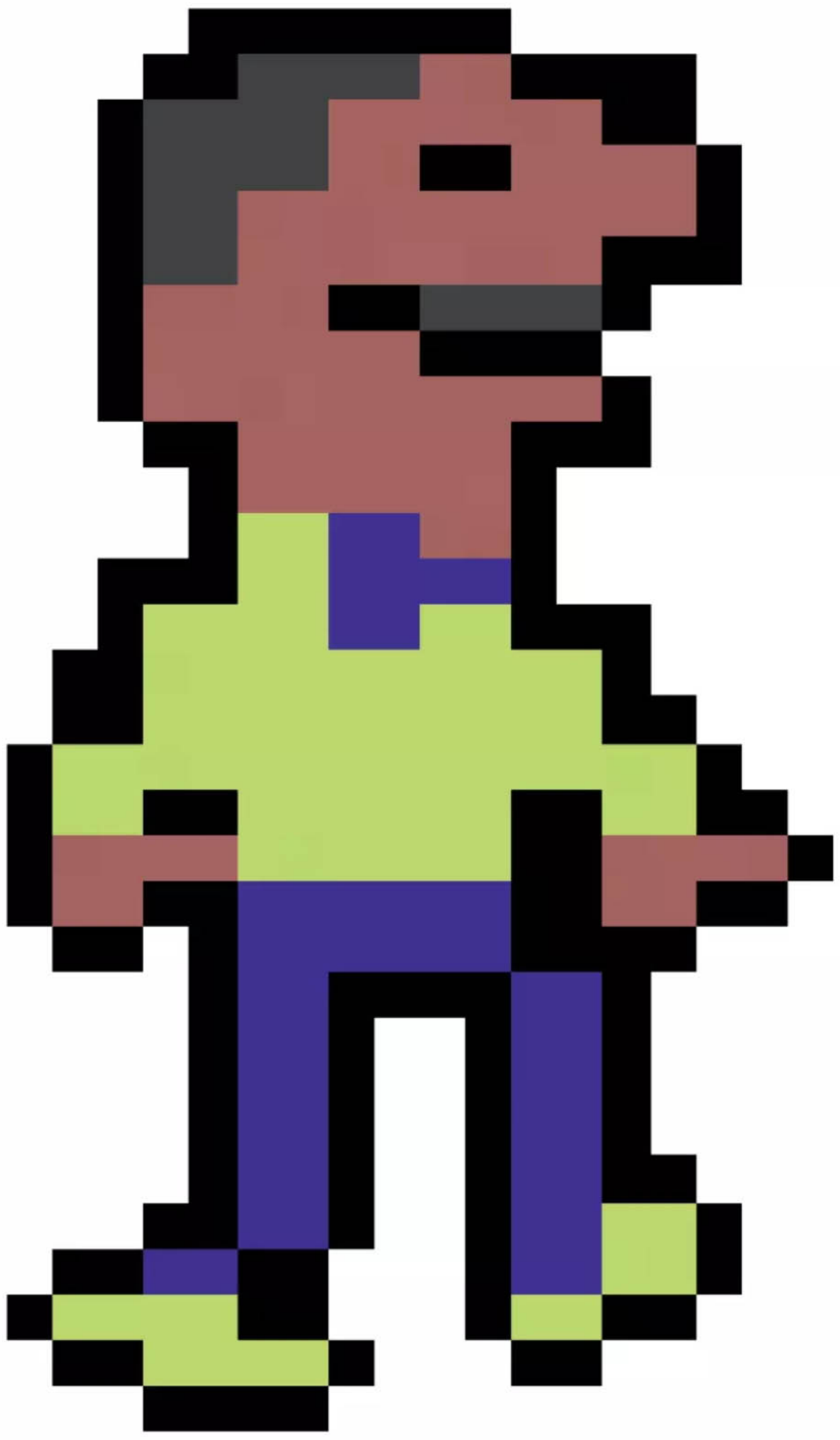
I rely on other experts – artists, animators, composers, sound effects specialists etc, but what I do is to take the work of these others and breathe life into them. I create a complete world in which they have an existence of their own, and it is this world into which the player is allowed a glimpse.

Aside from your excellent *Atari Magic* apps, what else can we look forward to?

I developed the *Atari Magic* apps just to document some of the more obscure tricks that were needed to make a game for the Atari 2600. It wasn't much more than a labour of love. I haven't had time to do any more in that series, however, because we got busy developing *The Iron Horse* for both Apple's iPad and iPhone.

The Iron Horse is a very simple game – by design. At a recent conference I spoke to a number of contemporary game designers. One told me that "I can design a giant story game with hundreds of thing to do and see. But it is really hard to make a simple game that is just fun to play." Figuring out something that is simple to do and yet still fun is what Garry and I do best. That is embodied in The Iron Horse. At first blush you will think of it as too simple to be interesting. But a few minutes into the game you might be surprised.

As one reviewer put it, "When I sit down to play a game or two, it becomes nine or ten. It's just very easy to pick up and play, very intuitive. I never once played it for more than five to ten minutes at a time, but it's always one of the first games I'd play when sitting down with the iPad with intent to do something else."



How do you find the iPhone to program on compared to earlier systems?

All game systems have their little quirks, and I suppose the iPhone is no different. But one of the most important issues when dealing with a game console is performance. How fast will my game operate on the device? The iPhone performance is great. And more importantly, because the iPhone doesn't run multiple apps simultaneously, a game designer can count on the same performance for every player, every time. When you hear complaints that the iPhone doesn't run multiple apps, consider what will happen on those devices with multiple programs vying for one CPU.

> "ATARI MADE A MISTAKE – ONE THAT IS REPEATED OVER AND OVER IN EVERY BUSINESS"
>
> DAVID CRANE

What do you think about the current videogames market David?

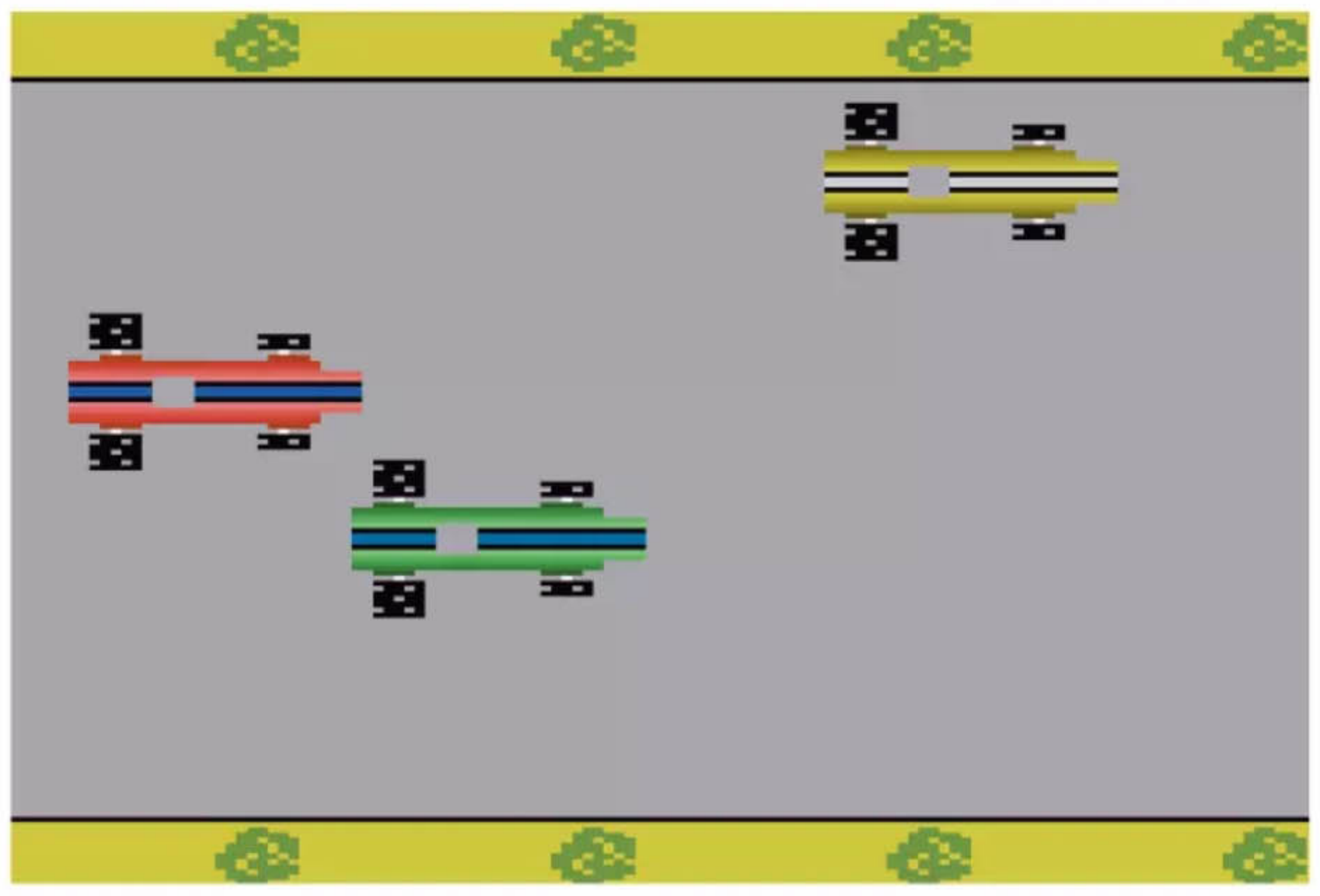
There are some great console games on the market. There are games that required dozens of talented people working many years to complete. Those games are not my cup of tea, either making or playing, but as a player you should enjoy them. A lot of things have to come together to make them possible, and unless you support them with your purchasing dollars you won't get to see the next generation of that game.

How has the industry changed since you started, and do you think it has changed for the better?

As I have said, the biggest change in the industry has been direct-to-consumer sales of games. Large studio games will still be funded by one of the larger publishers like Activision, but direct sales make it possible for many smaller developers to create games and get them to market.

CITY'S PK ENERGY: 2633 $2800
ACTIVISION

» *Ghostbusters* was an absolutely massive success for Activision and proved that it was perfectly possible to make a brilliant game out of a comedy.



» David Crane remains immensely proud of *Grand Prix*. At the time it really pushed the hardware technology found in the Atari 2600.

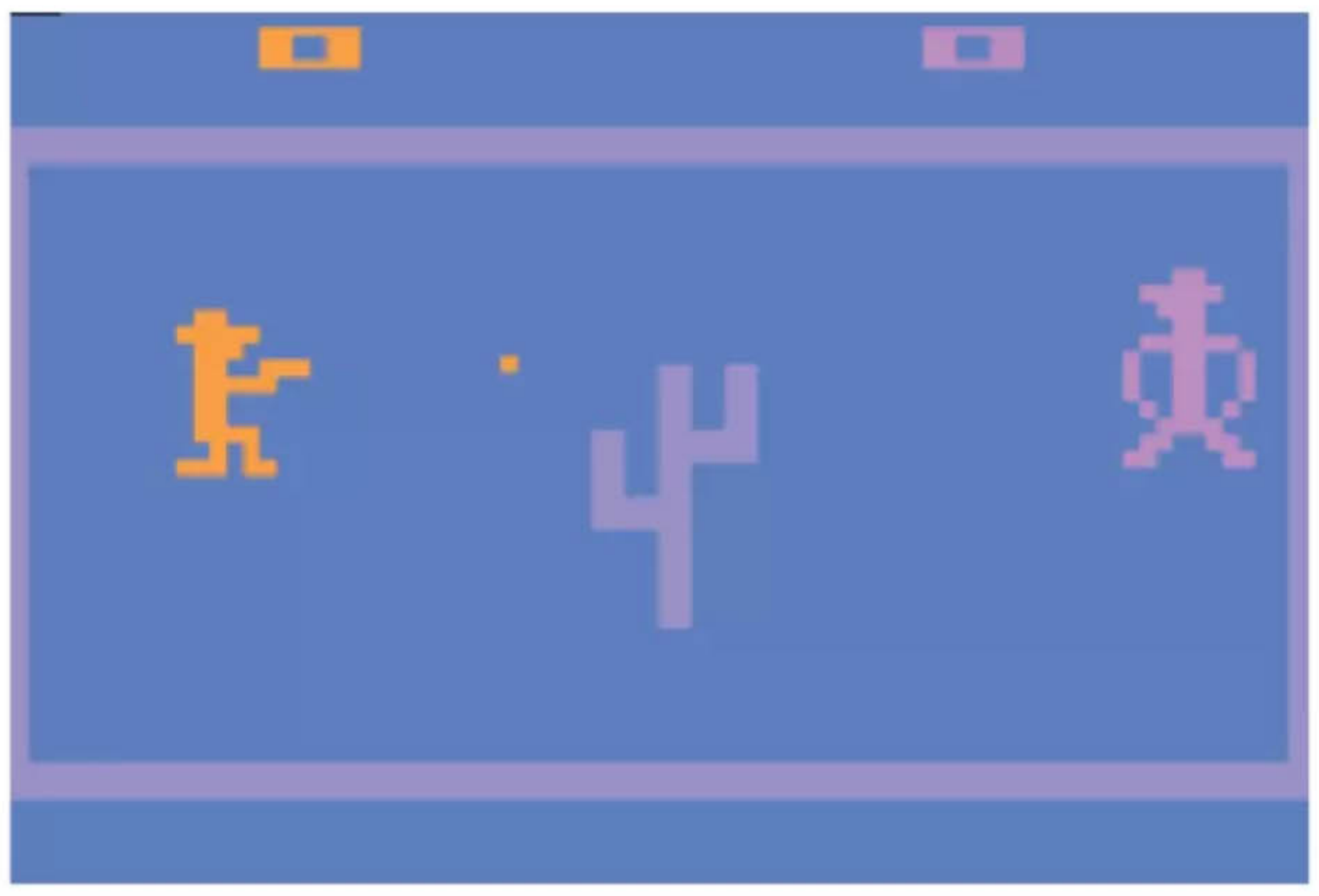
This can be a very good thing for some, but it actually causes other problems. One of the biggest problems is the lower price points for games. A teenager making a game in his bedroom might be happy to make a few hundred dollars on a game, so he has no problem offering the game at 99 cents (I have read of guys who were perfectly happy that they were able to buy a new Mac on the proceeds of a game). But professional game studios have to pay half-a-dozen professionals, pay the rent, utilities and health insurance for two dozen employees. That is hard to do if the expectation is that a game is only worth 99 cents.

When I spend thousands of hours making a game, including tens of thousands of dollars of art and sound development, I still have to sell the game for only a dollar or two. Thanks to thousands of teenagers making games at home, that is what the market has come to expect. Once you play a game made by a professional design team, you can certainly see the difference. But until you do, it is hard to get noticed.

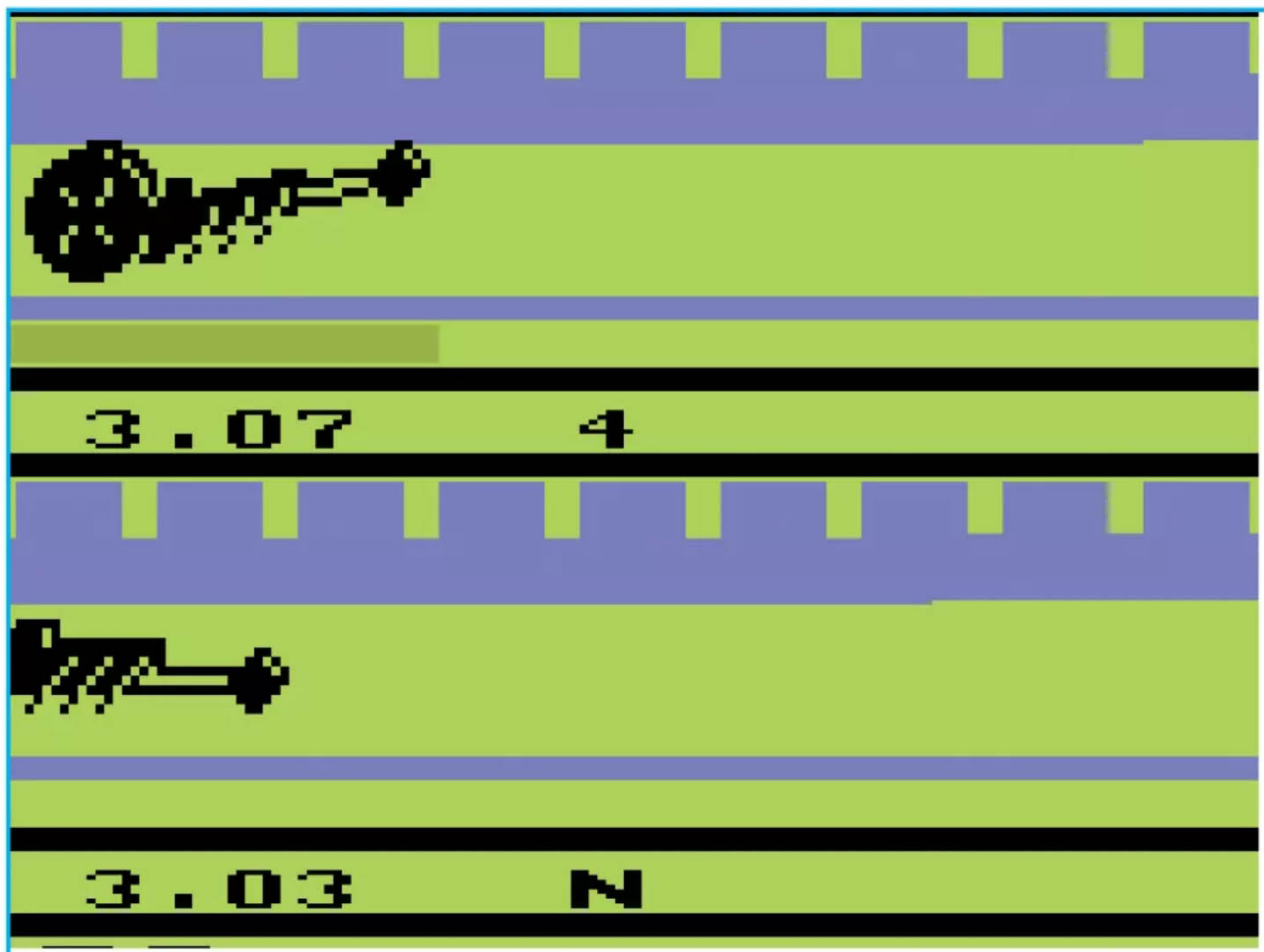
There's just one last thing we'd like to ask before you go David: Just how good are you when it comes to playing tennis?

For most of my adult life I played tennis with an NTRP (National Tennis Rating Program) rating of 5.0 (this is a standardized scale from 1.0 for beginner to 7.0 for Roger Federer). A very small percentage of the millions of tennis players achieve a rating of 5.0 or better. Tennis has been a lifelong passion, and it helped to make *Amazing Tennis* into a realistic simulation of the game (it was named for the amazing 3D parallax display never before seen on the SNES).

I still play tennis in tournament and league competition, but due to age and injuries I no longer play at the 5.0 level.



» David wasn't adverse to getting inspiration from other games. *Outlaw* is similar in some ways to the arcade game *Boot Hill*, which was once very popular.



» *Dragster* was an early Activision title and served as a warning shot of the great things to come.

EED 120 "PERFECTS" 0 MISSES 3 BONUS 900 SCORE 3781
8 Car Train: The General

» David's latest game is *Iron Horse*, an addictive game designed for the iPad.

Foot Locker

» David loves tennis, and *Amazing Tennis* is a great testament to his passion for the sport.

MORE FROM DAVID CRANE

THERE ARE PLENTY OF OTHER QUESTIONS WE WANTED TO ASK DAVID, HERE ARE SOME HE ANSWERED…

■ Who did the at voice sample in the *Ghostbusters* game? It was really memorable.

That is a good question – and one that I don't clearly remember. I had written an audio digitiser and driver for the C64. The actual voice sample would have come from Russell Lieblich, who sadly passed away in 2005. Russell provided music and sound effects for many of Activision's games in that period of time. I'm sure he would have first tried to use the voices from the movie theme song. But it is possible that he was unable to isolate that sample from the underlying theme music, which would have made the sample unusable. If that happened he would have probably set up a microphone and borrowed people in the company. But I don't know for certain, and I am sorry to say that we can no longer ask him.

■ Have you ever been tempted to make *Pitfall 3*?

Pitfall! (the license) remained the property of Activision after I left in 1987. So I never thought much about resurrecting Pitfall Harry after my departure. But I do like side-view adventures, and I have done a number of games in the genre since then as online games.

■ Do you still have the personalised license plate "Pitfall"? If so, how much to buy it from you?

I still use that license plate since I put it on my car in 1982. I had an old 280Z that was due to be replaced, and I was on vacation thinking about a new car and what custom license plate I might like. There was no way to get "Activision" to look good with only seven letters, and that was a disappointment. When it struck me that Pitfall would fit perfectly, I cut my vacation short to get to the DMV. As for buying it, I would gladly consider any seven-figure offer.

■ Have you ever finished a project and immediately thought of a dozen ways to improve it?

Every game project ends because it hits a limit, and that limit is rarely a lack of ideas. In the early days we ran up against the ROM limit before any other. As technology improved a project ran out of time or budget before running out of memory. But in either case the key to videogame design is to get as much playability into a game within available limits. There has never been a game that couldn't have been made better with more time, more budget or more memory.

■ What non-Activision Atari 2600 game impressed you the most?

While still at Atari, Rob Fulop did a great job on the 2600 version of *Missile Command*. Making a 2600 version of an established arcade game is one of the toughest challenges in our field, and that was very well done. A second choice would also be a Rob Fulop game: *Demon Attack*. There wasn't a lot to the game graphically, but that could be said of most 2600 games. Rob tweaked the game very well, keeping the game compelling as it ramped up in diffculty over time.

■ What was/is your biggest programming regret and why?

Looking back I wish that *Little Computer People* had been a commercial success. While it was a huge critical success, there was so much programming in the game that it cost more to produce than it made at retail. We had dozens of ideas for follow-up products, but if those ideas were going to lose money the company couldn't afford to produce them. I regret that.

The games

ATARI HAS BEEN BEHIND SOME OF THE BIGGEST ARCADE GAMES OF ALL TIME. FROM PONG TO STAR WARS, WE REVEAL THE CREATIONS OF THESE CLASSIC ARCADE HITS

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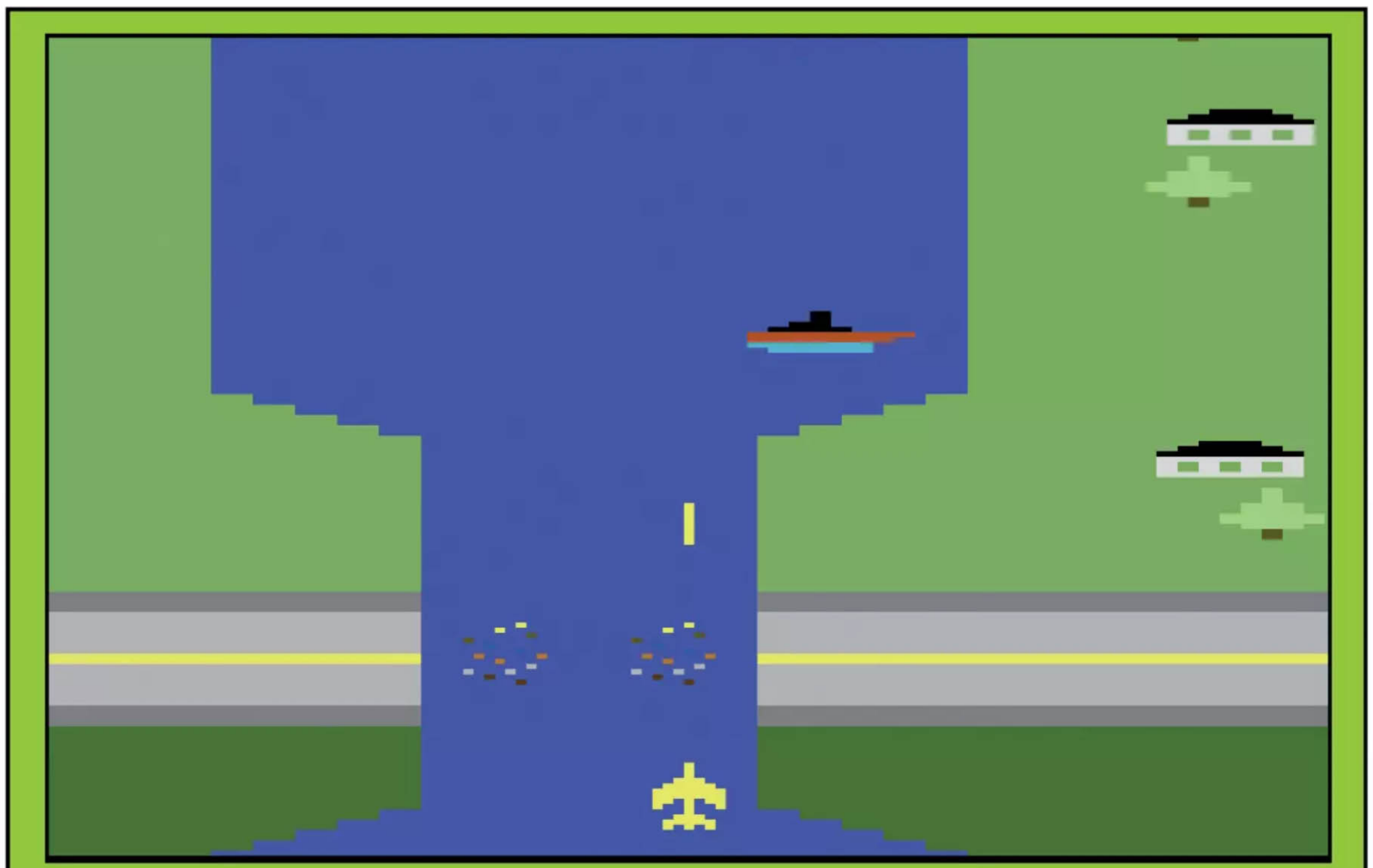

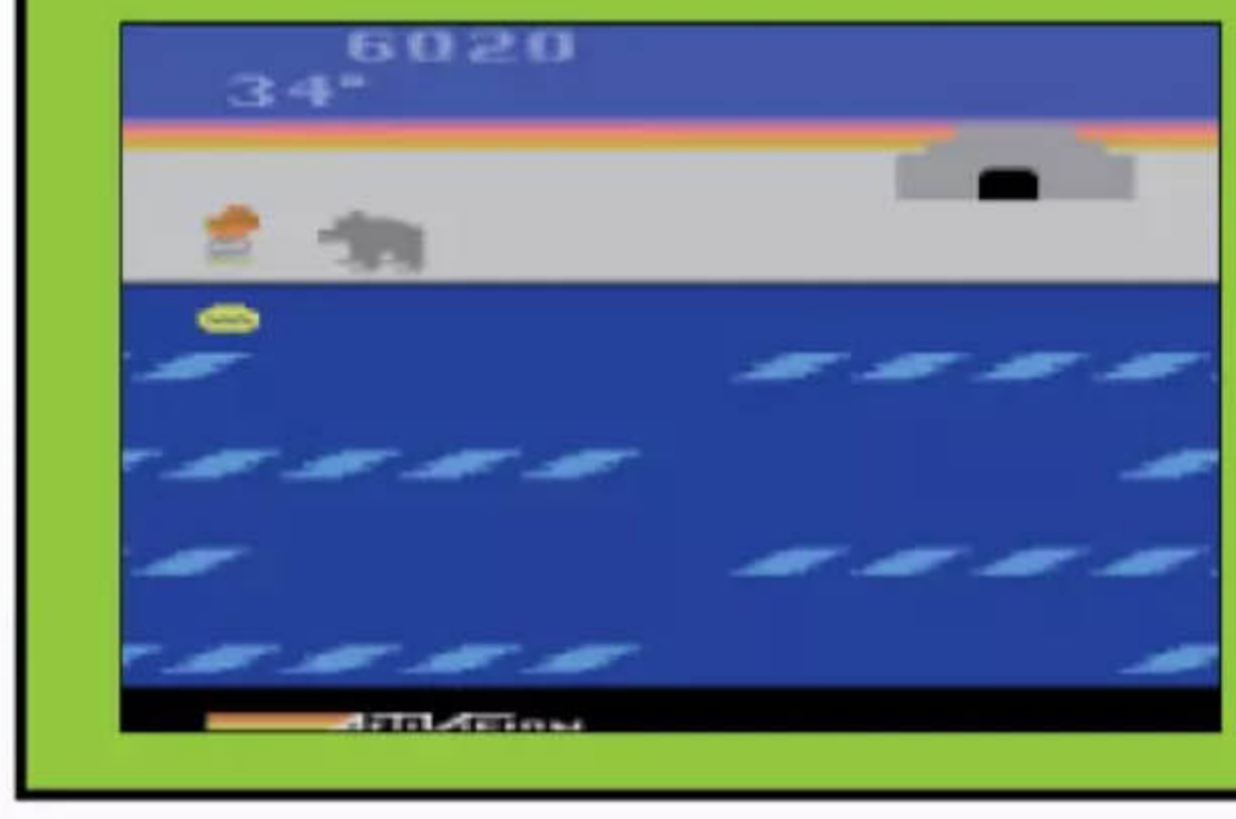

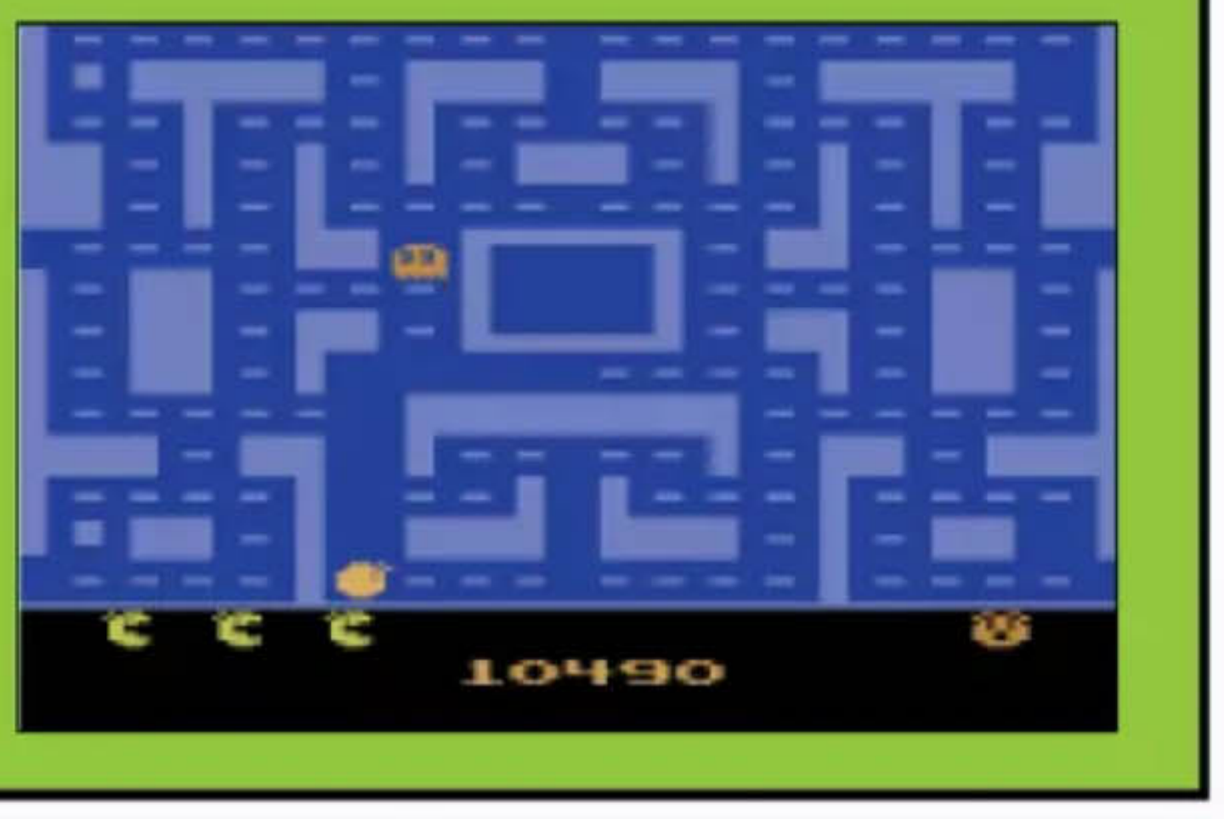

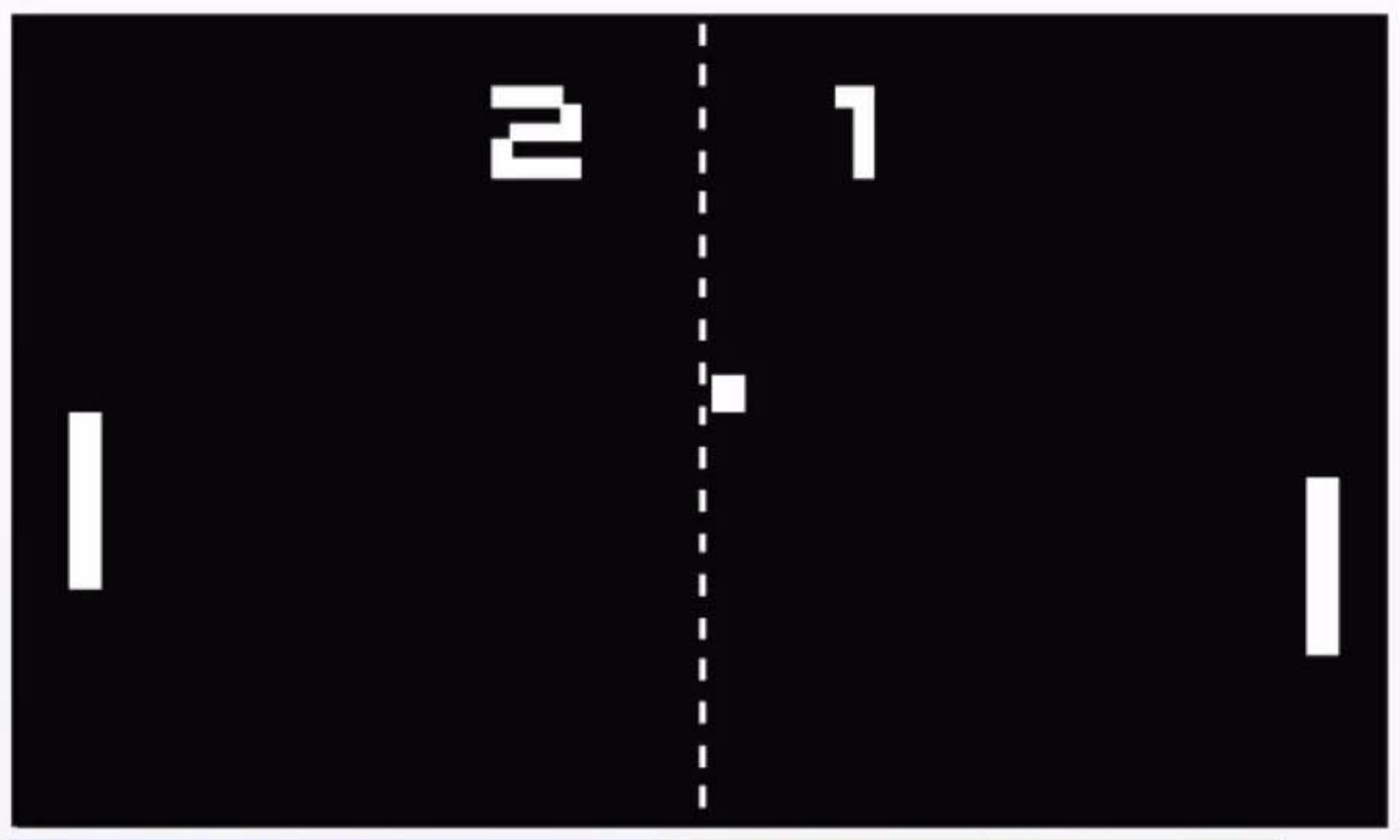

TRAFFIC
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SCORE
SHIELD
ENERGY
PRESS FIRE TO STAR

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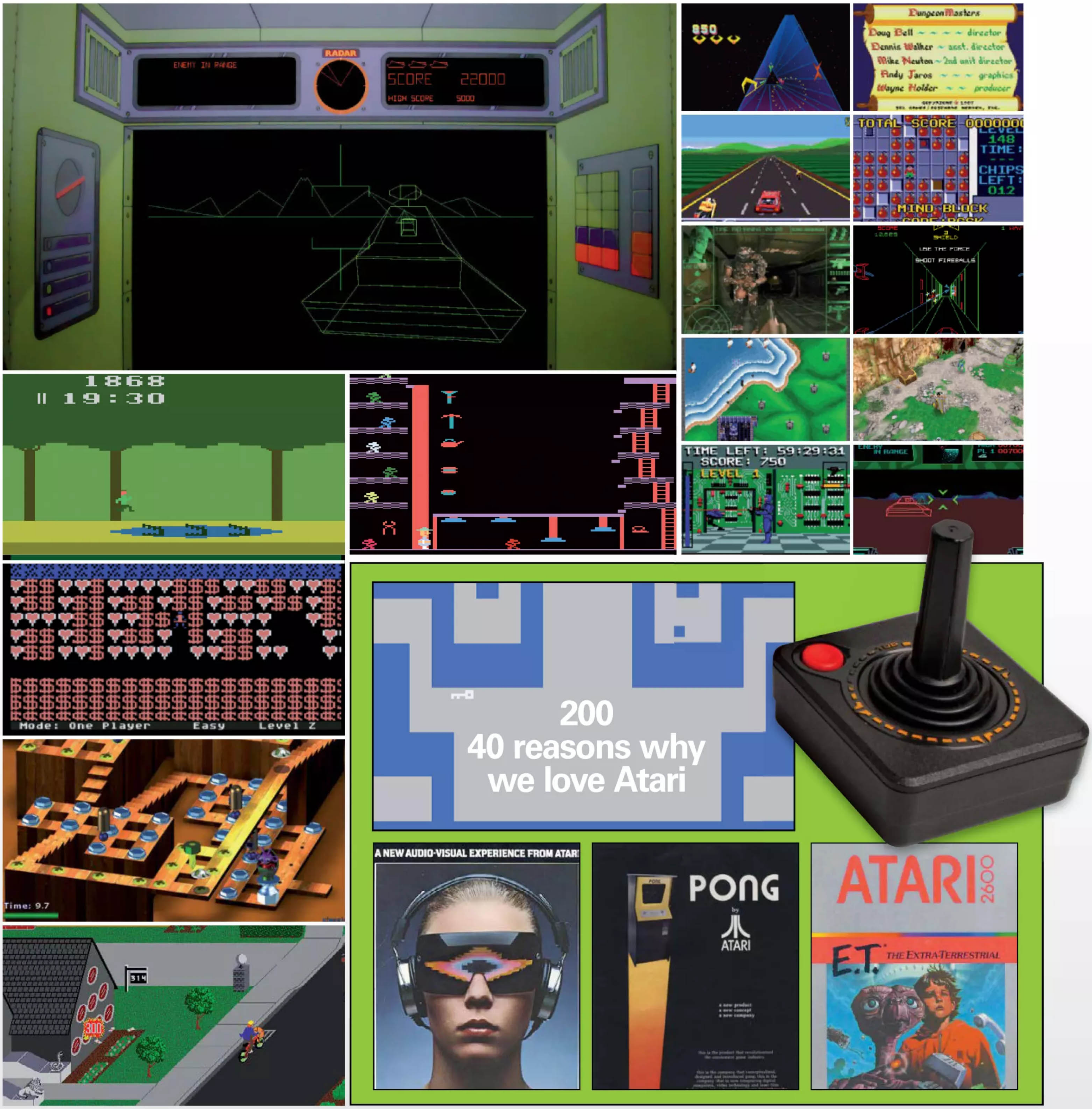
200 **40 Reasons why we love Atari**
Discover why Atari is amazing


ENEMY IN RANGE
RADAR
SCORE 22000
HIGH SCORE 5000
DungeonMasters
Doug Bell ~ director
Dennis Walker ~ asst. director
Mike Newton ~ 2nd unit director
Andy Jaros ~ graphics
Wayne Holder ~ producer
TOTAL SCORE
MIND BLOCK
USE THE FORCE
SHOOT FIREBALLS
1868
19:30
TIME LEFT: 59:29:31
SCORE: 750
LEVEL 1
Mode: One Player Easy Level 2
Time: 9.7
A NEW AUDIO-VISUAL EXPERIENCE FROM ATARI
PONG by ATARI
ATARI 2600
E.T. THE EXTRA-TERRESTRIAL

200
40 reasons why we love Atari

THE STORY OF PONG

IT WAS 40 YEARS AGO THAT A SIMPLE WARM-UP ENGINEERING PROJECT HELPED THRUST A NEW INDUSTRY AND COMPANY INTO THE PUBLIC EYE, FOREVER CHANGING HOW WE VIEW ENTERTAINMENT AND BECOMING THE DIGITAL FIRE FOR THE MODERN CAVEMAN. MARTY GOLDBERG TAKES US THROUGH THE HISTORY AND INFLUENCE OF PONG

They were at a turning point in their lives. Nolan Bushnell and Ted Dabney couldn't stay with Nutting Associates any more – that much was clear. But what were they supposed to do now to get their two-person game-engineering firm, Syzygy Engineering, out on the market?

Nolan found the answer by cold-calling several of the 'old guard' arcade game firms in Chicago. Bally, which had purchased fellow manufacturer Midway three years before, was interested in their videogame technology, but not if the duo was still going to be attached to Nutting.

Making a calculated decision, they gave notice at Nutting and rented a 2,000 square foot front-end office with back-end garage on Scott Boulevard to start up operations. Incorporating the company as Atari, they signed a contract with Bally to design a pinball machine, an electromechanical arcade game, and a video arcade game. Money from the contract would come in monthly, and combined with a coin-op route of pinball machines they had purchased from a fellow former Nutting employee, they had enough to get their small firm up and running and hire some employees. Their first employee was Cynthia Villanueva, a babysitter for Nolan's children who was hired as a combination secretary and work mother for the pair, making sure they would eat during the long hours at work.

"HE OFFERED ME A SALARY AND TEN PER CENT OF THE STOCK IN THE COMPANY"

AL ALCORN ON NOLAN'S JOB OFFER

It was the second employee, though, that has the real bearing on this story. Al Alcorn had been part of a stable of interns at Ampex's Videofile division when Nolan and Ted worked there.

A burly American football player in high school who decided in college that his future lay in electrical engineering rather than the gridiron, he was on his six-month rotation when he first met Nolan and Ted. By the time they were starting up Syzygy Engineering at the end of May, Nolan paid the associate engineer a personal call.

"He offered me a salary – about $1,000 a month – and ten per cent of the stock in the company," says Al. "I was already making $1,200 a month as an associate engineer and the stock seemed worthless to me because I could care less. It was a nice token, but not that important to me. I accepted the offer because I thought that it would be fun."

Al had never seen a videogame before, and Nolan got him up to speed by plopping the diagrams for his and Ted's game, *Computer Space*, into his lap. In between looking over the technology, Al also had to pull his weight in the small startup where everyone had a role. Ted's was to build the pinball machine, keep the company's books, manage the facilities, and run the coin-op route. Nolan's job was to be Nolan – look over progress and, as Al puts it, "keep bullshitting" Bally that they were making progress so it would keep sending cheques. Al's role, besides engineering, was to help collect the coins on the route that was helping to keep Nolan and Ted afloat, since they weren't making a salary themselves.

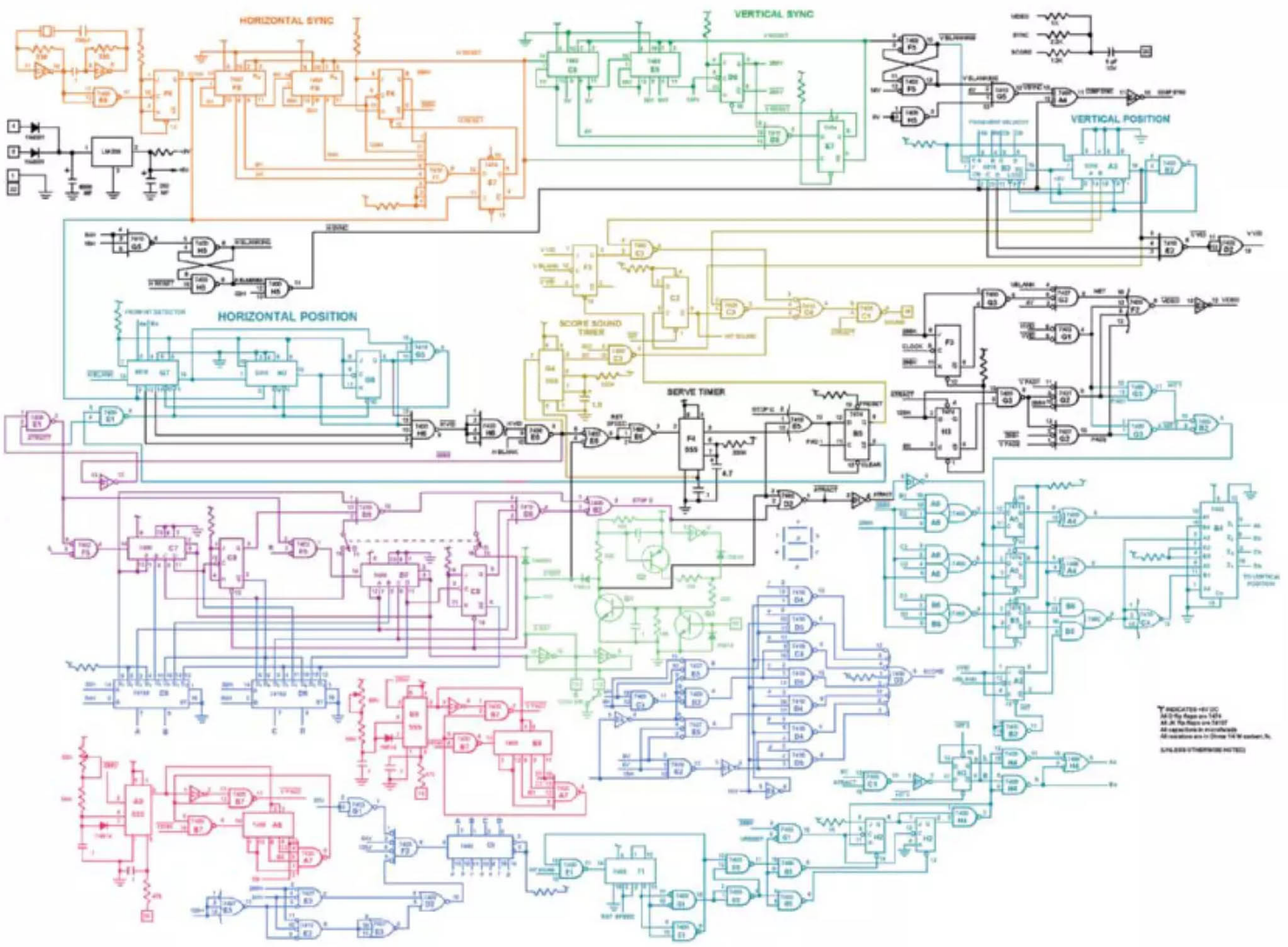
"[Collecting the money] taught me about designing things that work in a public environment," Al says. "When a machine steals your money you feel you have a right to destroy it. So it has to be really well built, but still be cheap to manufacture. I learned a lot about that from collecting on the route."

Al's conditions were spartan, consisting of a work area with a single old oscilloscope that they all shared. But the fun he was seeking was just about to begin.

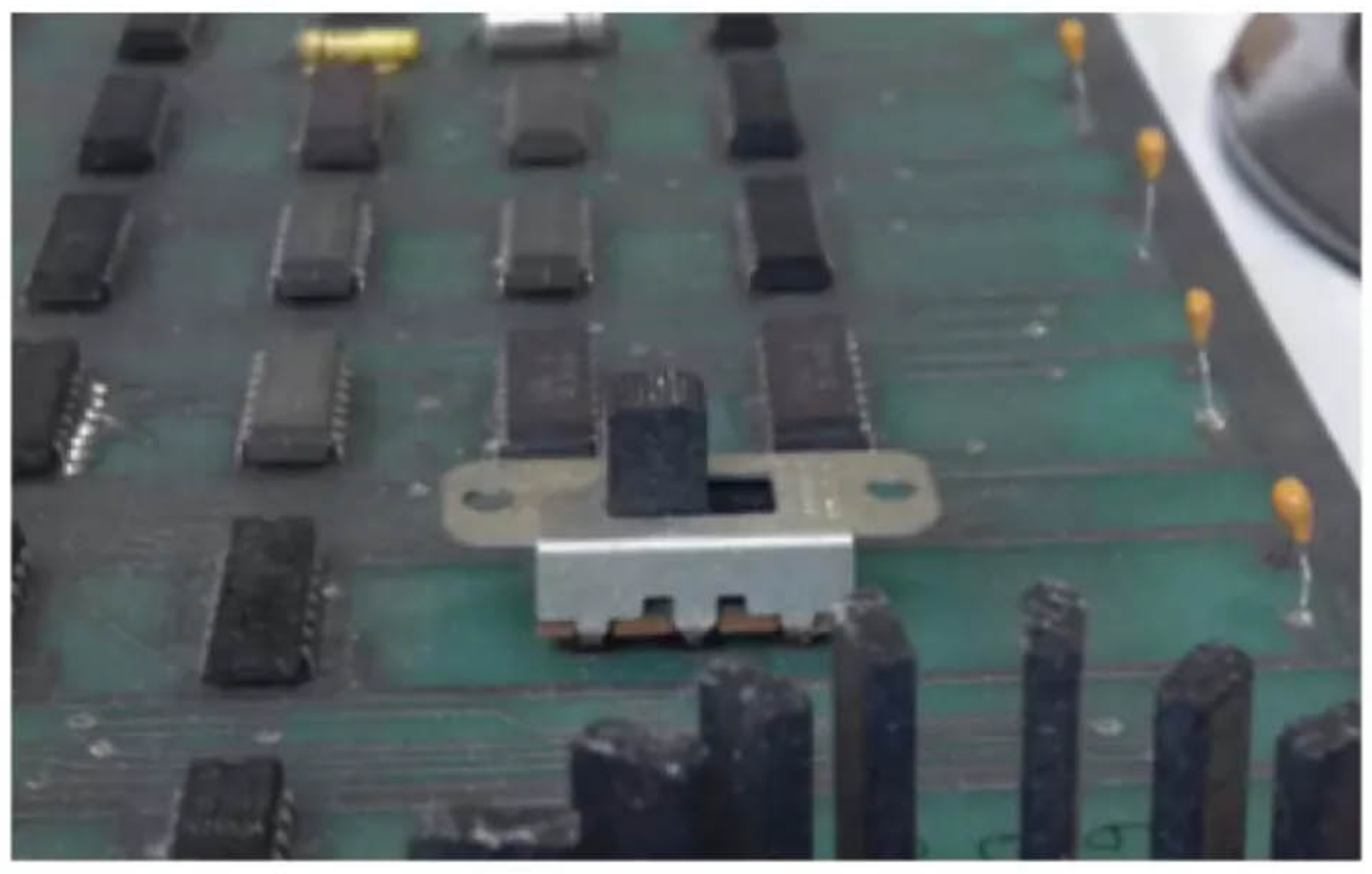
Pong begins

It started with a challenge to make a game. Nolan wanted a driving game but had decided that Al needed to warm up with something simple. So Nolan lied to Al, claiming they had a contract with GE for a consumer videogame that had to use very few chips. Thinking back to the Magnavox Odyssey demo he had been to that past May where he saw a tennis game, he decided to tell Al the game was to be an electronic version of tennis. He then proceeded to describe what he saw of Magnavox's game, aiming to have Al tweak it further.

One thing was clear in Al's mind: he couldn't make heads nor tails of Nolan's unorthodox schematics that he'd been trying to study. Nolan had to walk through the basics of the spot-motion circuitry that Ted had



» Games in the early Seventies were literally engineered, as they did not use microprocessors or code of any sort. A circuit had to be designed to control each individual aspect of gameplay, as seen here.



designed, explaining how the sync generators work to draw things on the screen.

Al started out by getting a ball moving around on the screen, designing the circuits needed to change direction. This process shouldn't be lost on the reader, who may be more used to today's gaming world where Pong is commonly used as an intro to game programming. Arcade videogames didn't use microprocessors at this time, so there was no game code. In those days, videogames were engineered – no different to any other consumer product like a toaster, telephone or stereo. Game designers in the early Seventies were electrical engineers like Al, creating a circuit for every mechanic that would later be done in software.

When Al went to work on the iconic paddle controls for the game, several ideas came rolling out from the creative part of his brain. Ideas that would become an important part of making it the fun game it is to play to this day.

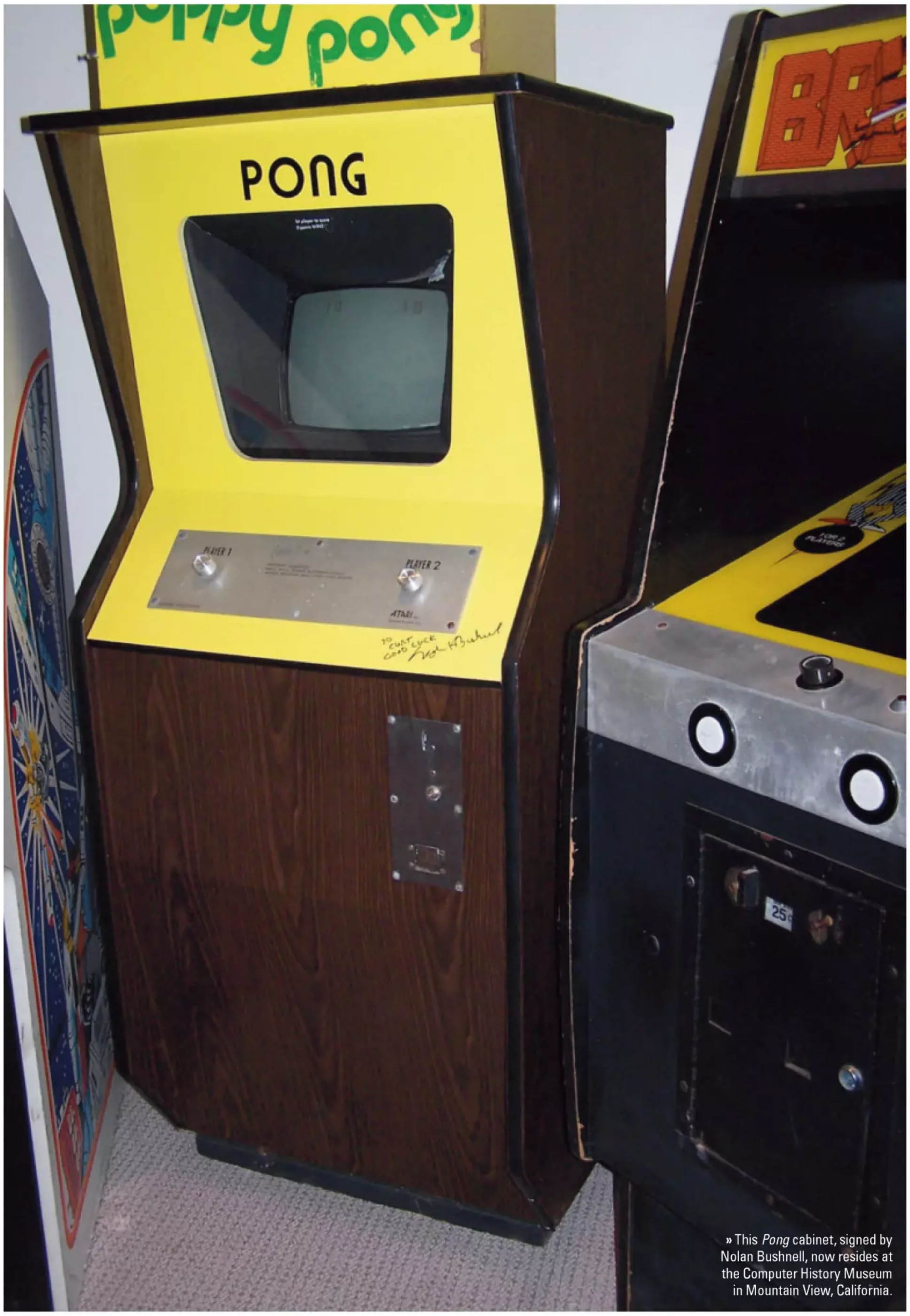
First there was how to do a simpler version of the 'English' Nolan had described seeing on the Odyssey. Simply a way to make the ball volley off the paddle in unpredictable lines, it makes gameplay between opponents a bit more chaotic, like real tennis. The Odyssey uses a separate 'English' dial control, but Al was able to come up with a simpler method that proved just as fun.

The paddles in *Pong* are 16 pixels high, and by segmenting it into eight sections each, two pixels high, he was able to dictate how the ball angled off the paddle. The catch was the angles were an illusion created by horizontal and vertical speeds. The horizontal speed was set by how many times a volley

PONG MEMORIES

My first memories of *Pong* are from when my mum got me a Binatone TV Master MK IV in the late Seventies. It was fantastic – you could actually play games on your TV!
It may not look much by today's standards, but it was bloody good fun!
So many great memories for a classic game!

» Jim Bagley, Ocean Software



» This *Pong* cabinet, signed by Nolan Bushnell, now resides at the Computer History Museum in Mountain View, California.

"WHEN A MACHINE STEALS YOUR MONEY YOU FEEL YOU HAVE A RIGHT TO DESTROY IT. SO IT HAS TO BE REALLY WELL BUILT BUT STILL CHEAP TO MANUFACTURE. I LEARNED A LOT ABOUT THAT FROM COLLECTING ON THE ROUTE"

AL ALCORN ON BUILDING MACHINES TO LAST

HOMEGROWN PONG

A SELECTION OF THE MANY PONG VARIANTS THAT WERE AVAILABLE ON THE HOME MARKET

MAGNAVOX ODYSSEY

1 Ralph Baer's influential console was created in 1972 and featured two hand controllers. It is the first home example of a console featuring a tennis game, and inspired Atari to create Pong.

SUPER PONG

2 Wanting to emulate the success of Pong in the home, Atari created Super Pong in 1976. Unlike similar home systems of the time, Pong was the only game available on it.

WONDER WIZARD

3 General Home Products' Wonder Wizard is an interesting system, as it features a Magnavox Odyssey 300 circuit board in the Magnavox casing. It features a number of games, including a Pong-like version of tennis.

TELSTAR RANGER

4 The Coleco Telstar Ranger was released in 1977 and is a six-game variant of the original Telstar that was released. It came with an authentic-looking pistol and two controllers, with the gun games being Target and Skeet.

VIDEO SYSTEM

5 This system from First Dimension looked interesting, with the first model released in 1975. The better 1976 variant, shown here, played relatively complex variants of Pong.

TELEVISION TENNIS

6 Does exactly what it says on the tin. This home system was created by a small company called Executive Games and was first released in 1975.

HEATHKIT GD-1380

7 As with other systems featured here, the Heathkit is powered by a universal chip, in this case the AY-3-8500. It's a bit of an oddity, and not just due to its radio-like appearance. It only works on Heathkit TV.

PONG IV KIT

8 Interfab Pong IV Kit existed in three forms: fully assembled, partly assembled or in kit form, requiring full assembly. Released by Interfab in 1976, it played just two games, Tennis and Handball.

VIDEO SPORT MK2

9 This stylish-looking system is one of the earliest European variants of Pong, appearing in 1974/1975. Created by British retailer Henry's, it included three games: Tennis, Football and Hole In The Wall.

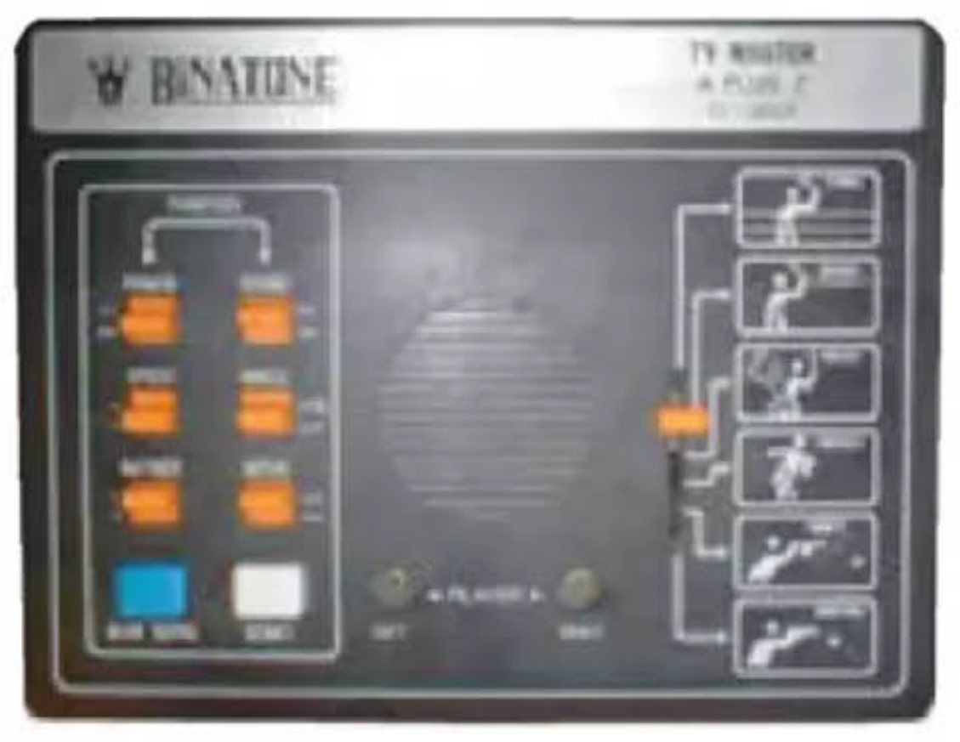
TELE-SPIEL

10 We love the look of this, and not just because of its bright colours. It came with a Pong variant, and four additional games could be purchased. There's no scoring system, so players physically score on the controller.

VIDEOMASTER
HOME TV GAME

HOME TV GAME

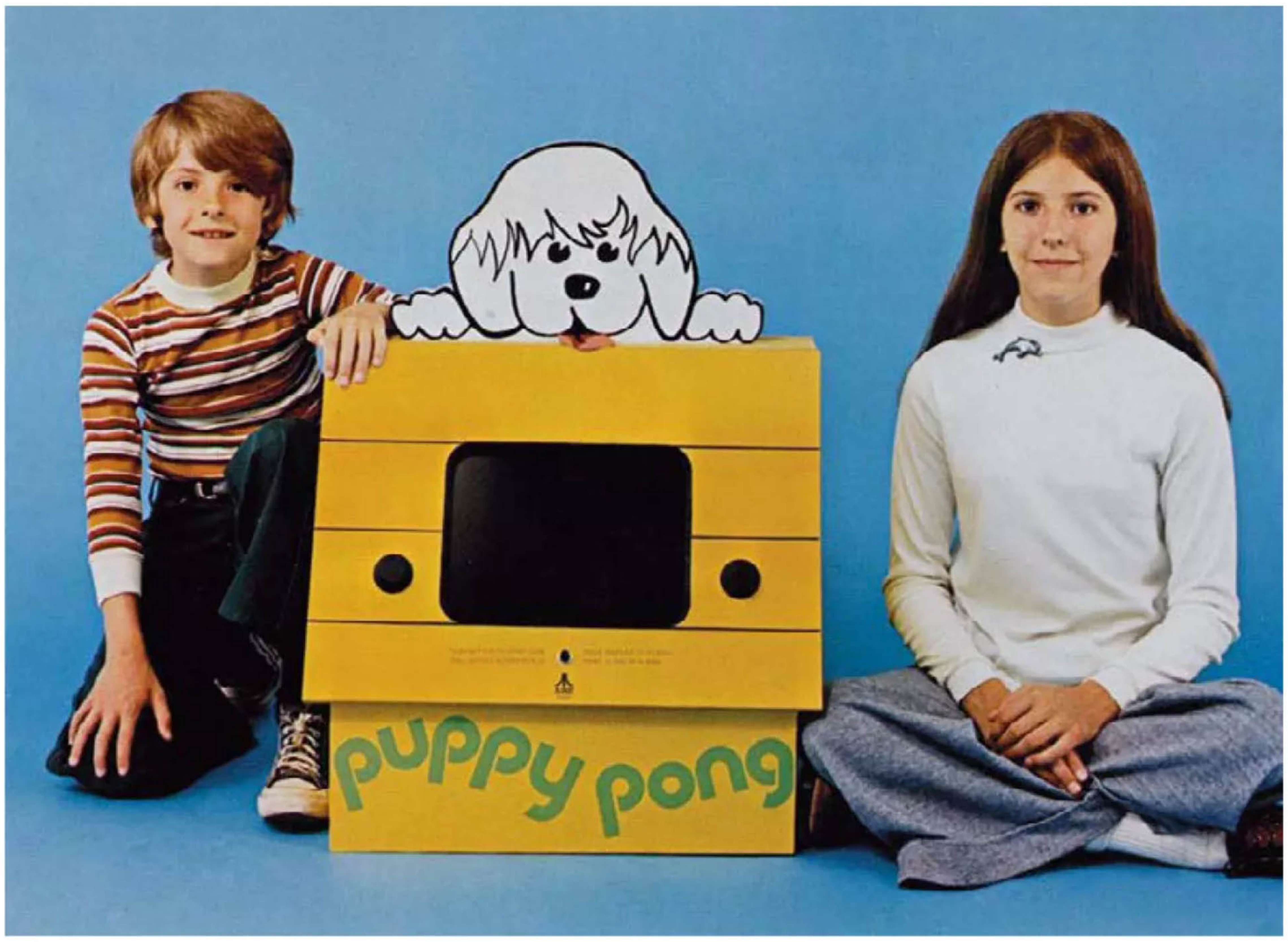
11 Another early European system, believed to have been first available in 1974. It played Tennis, Football and Squash and is notable for having a large number of variants.



BINATONE

12 Distinctive thanks to its orange casing, it's another six-game system. It also includes two gun games, with the gun peripheral having a cool scope.

Images courtesy of David Winter. Visit www.pong-story.com for more great information about Pong.



“WE CUT THE NUMBERS TO BALLY TO ONE THIRD. BALLY STILL THOUGHT WE HAD EXAGGERATED THE NUMBERS”

TED DABNY ON CONVINCING BALLY

» Nolan inspecting rows of *Pong* games being manufactured in 1973 at a roller rink. He and Ted needed the space, and this rink proved the right fit.

occurred between the paddles, a feature that Al had added to make it more interesting.

Tweaking begins

“Nolan had told me that it had to be a consumer product,” he explains, “so I thought two guys could sit there and play it forever if the ball had just one speed. So I added the speed-up where after a certain number of volleys it would go faster and faster.”

Which segment of the paddle was hit would then decide the vertical speed of the ball. Hitting the top or bottom ones would imbue the ball with the highest speed, with each segment closer towards the centre decreasing. Finally, the middle two segments produce no vertical speed change. Combined with the variable horizontal speed, players were now able to create a much more unpredictable, entertaining volley.

Another ‘feature’ that Al added to the game actually spawned from a defect in the design. The motion of the paddles on the screen is controlled by a special timer chip, the 555, which uses the motion of the spinner controllers as part of its control. A limitation in the chip caused the paddles not to be able to be drawn all the way to the top of the screen, leaving a small gap that a ball can fit through. Instead of coming up with a fix, Al left it in as a stalemate breaker.

Nolan’s demand for a low chip count made Al self-conscious through the coming months of the design process. At every turn and request from Nolan to add additional features, Al kept second-guessing how it could be done. On-screen scoring, an on-screen net instead of one affixed to the TV screen, and then probably the most far-reaching request. When Ted and Nolan came to Al asking for the sounds of a crowd, Al declined. There just wasn’t a budget.

Nolan wanted cheering for scores; Ted wanted boos and hisses to sound whenever you ended up missing a ball. They instead had to reach a compromise and ended up with a blipping sound that’s now synonymous with early videogames and instantly identifies *Pong*.

By mid-August of 1972, about three months since he started, Al had completed his ‘test game’. Nolan was ready for Al to move on to his ‘real project’, the driving game they’d actually be providing to Bally. The tennis game would just fade off into the darkness. There was one problem, though: it was too much fun to play. Ted thought the game was a great finished product and should be the one they submitted to Bally, and Nolan wanted no part of that. The two had what Ted described as a “knockdown, drag-out” screaming match in each other’s faces. The end result was that Nolan agreed to at least test it out.

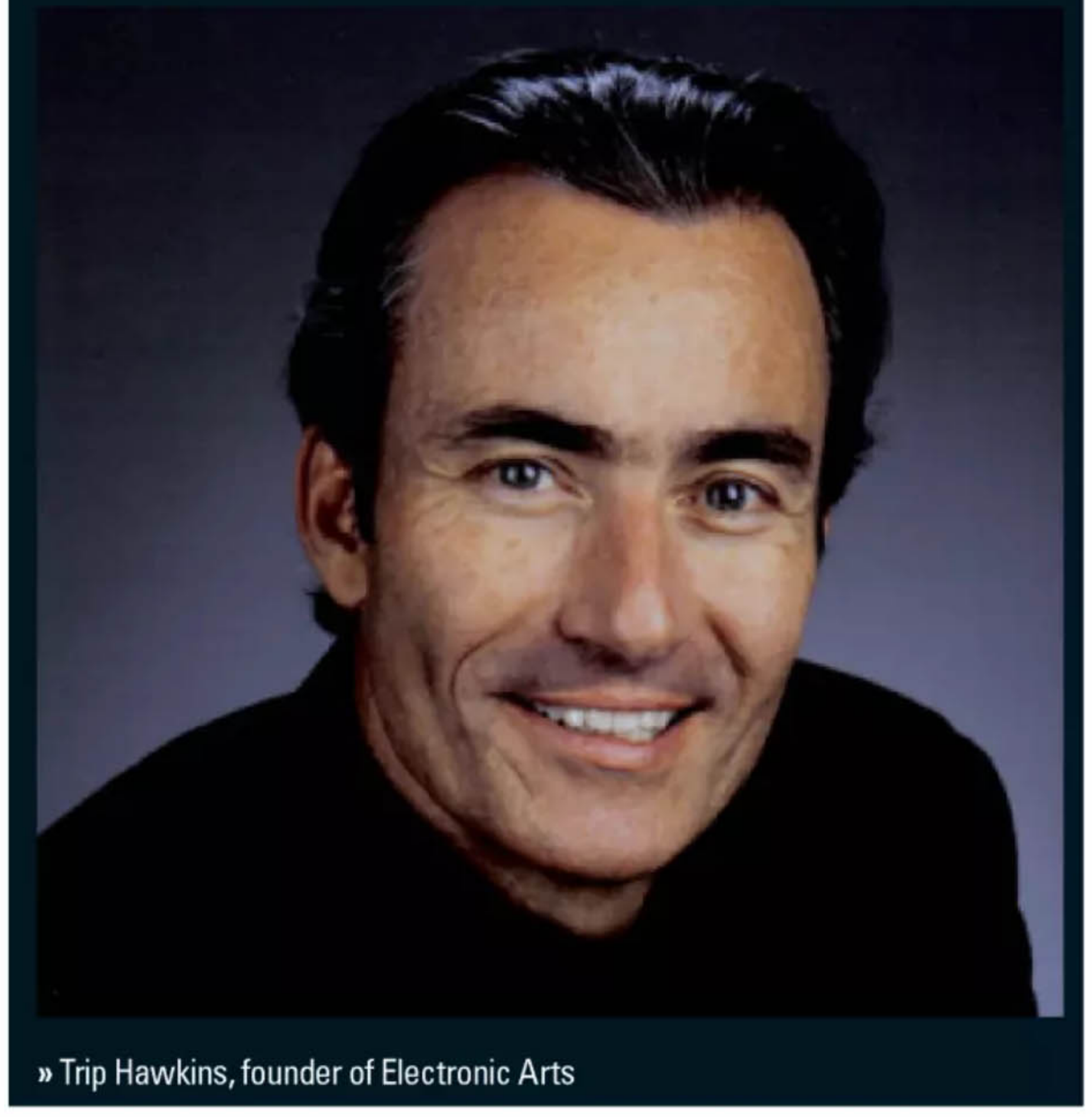
Going to Al and presenting it as his idea, Ted offered a plan to test out the game at one of their locations, still not letting on that there was no GE contract. Al agreed, still thinking the product had been a failure based on the cost specs he had been given. Ted got a television monitor ready for it, using the same gutting process he had developed when he first created the spot-motion circuitry for *Computer Space*. He then built a cabinet over the following weekend – a half-sized, boxy design for the television and Pong prototype to sit inside. Painted in a garish red/orange colour to attract attention, its size ensured that it would have to be propped up on something to bring it to face level. There were no directions on the control panel, no description of what it was about, nothing. A box with a TV screen, two knobs, and a coin box. There was one thing printed on the metal control panel, though. A single word named after the sound of the game: *Pong*.

They decided to place it at their favourite location out of all of them on their coin-op route: a popular tavern called Andy Capps. With seven machines there already, they elected to set the Pong prototype on top of a barrel next to *Computer Space*, which had been an earlier project of Nolan’s when he was still at Nutting Associates.

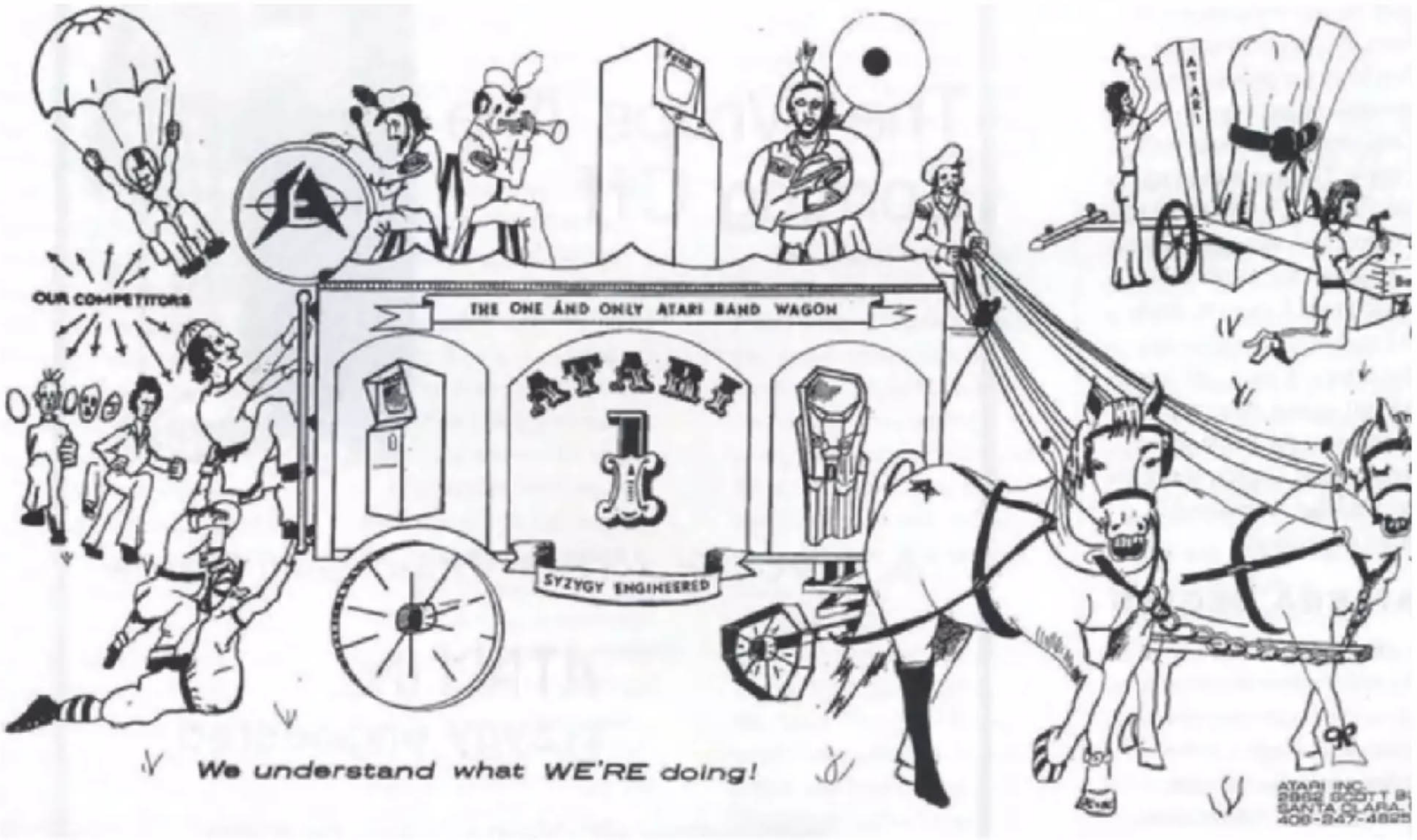
The legend today goes that the machine stopped working because of overflowing coins, but that’s not the case of the first breakdown. The first time was because of cheap potentiometers, the electronic component that the spinners are actually made from. They’re usually rated for a certain number of turns,

PONG MEMORIES

Pong was truly the first casual game and the first social game. Everyone played it. I mean, everyone. It is ironic that videogames after Pong quickly became too complicated for the mainstream public and that we are only now working our way back to mass-market casual and social games.



» Trip Hawkins, founder of Electronic Arts



» Other companies started entering the market with their own clones of *Pong*, and the market was soon overflowing. This was an ad Atari ran in Cash Box magazine at the time to help combat what Nolan called "the jackals".

PONG MEMORIES

What's funny is that I thought *Pong* was old-fashioned in 1982 when games like *Pac-Man* were on the scene, however today I find it a total joy to play *Pong*. *Pong* is the eternal classic that excels because of its simplicity and really fun gameplay!

» Mark Bussler, Classic Game Room

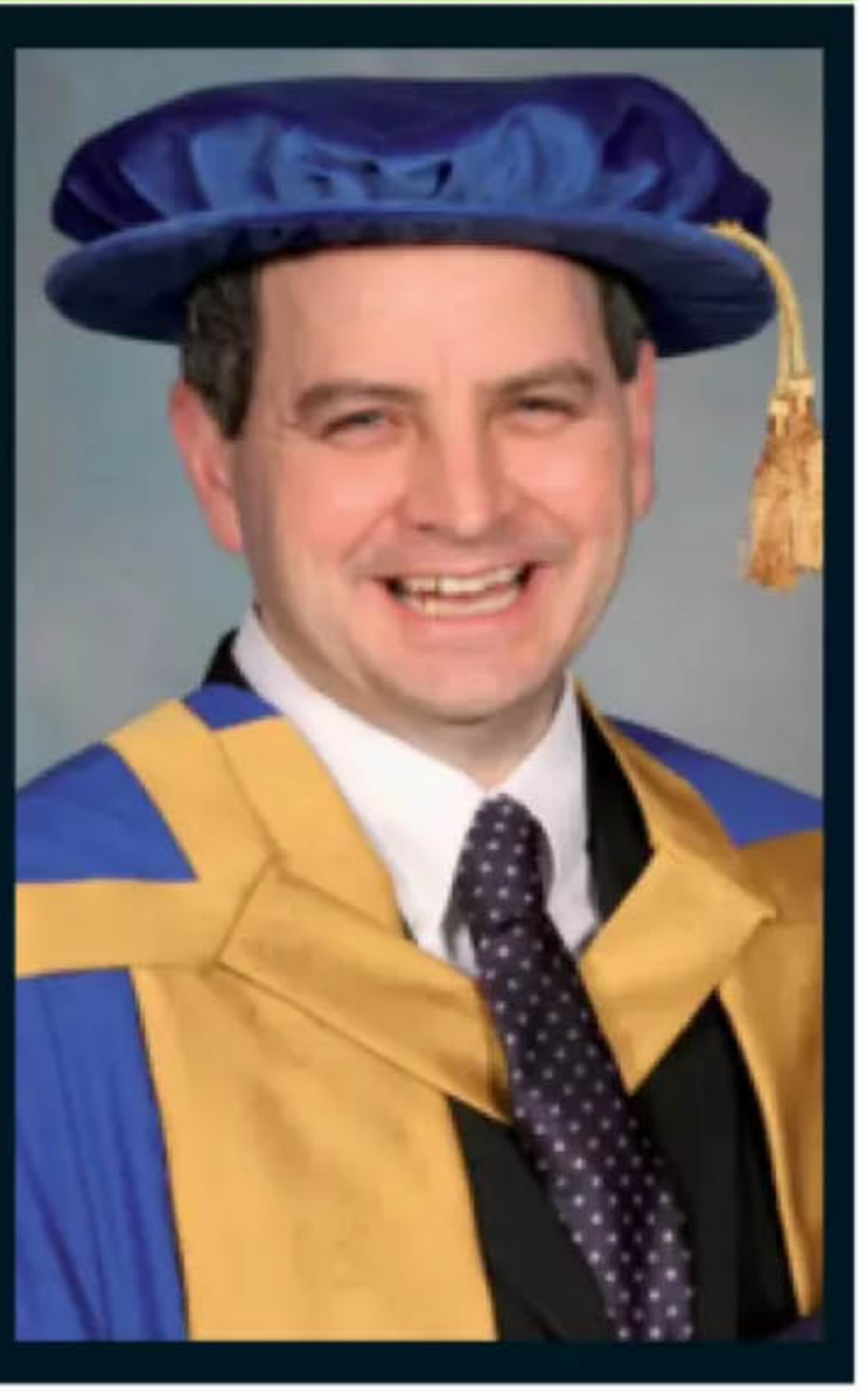
and Al calculated by the quantity of coins in the box that it was getting far more than what it was rated for. Probably about 100,000 turns by the end of the month, which was unprecedented.

Then, shortly after that, Al got the call for the more famous problem that everyone now knows about. The owner of Andy Capps called him to say that the machine had once again stopped working and that they should come down and fix it because there were lines of people still waiting to play. After heading down and opening the coin box, Al suddenly ound an avalanche of quarters flowing out. The only reason the game had stopped working was that the coin mechanism, appropriated for Pong from a laundry machine, had overflowed onto the circuit board. A simple fix, but also a promising start.

Nolan and Ted decided to go ahead and build another 12 *Pong* machines in more standard-sized cabinets. Ten would then go out to the other locations on the coin-op route, and they'd keep one at the office. The final one would be sent to Bally to evaluate for the fulfilment of the videogame portion of their contract. Yes, Nolan had acquiesced after the success at Andy Capps.

PONG MEMORIES

All of [Andrew's and my] early programming attempts were to rewrite *Pong* on our own brother's ZX81. I wouldn't be surprised if every games programmer that started in the late Seventies confessed that one of their very first games was a *Pong* clone!



» Philip Oliver, CEO of Blitz Games Studios

Success and manufacturing

The numbers kept coming in through September and they couldn't believe it. The new Pong-filled coin-op route had almost tripled their earnings. Ted was making enough money to look at replacing his old car. This game was going to be a big moneymaker for Bally – if it ever responded.

Nolan kept in contact with Bally, but it was apparent that it was stalling. Ted explains: "We were getting plenty worried because our future was in Bally's hands. We decided to put together an income report to give Bally some incentive. As we put this report on paper, the numbers looked impossible. We knew that they would think that we cooked the books.

"Since the numbers were so damned high, I suggested that we cut the numbers to Bally by one half. The numbers still looked unlikely, so I said that we needed to go to one third. A couple of the machines were much lower than the others, so Nolan suggested that we not cut those ones so drastically. I said that if we're going to lie, we have to be consistent so we would remember what the lie was. He agreed.

"Believe it or not, Bally still thought we had exaggerated the numbers [for *Pong*]. They were still stalling, but they owned it so we were up a creek. That's when I came up with the idea to get Bally to reject the game."

Nolan, Ted and Al found themselves in Nolan's working out what to do. Bally owned all the rights to *Pong*, since the game had been submitted as the videogame portion of the contract between the two companies. Even if they decided that they wanted to try to manufacture it themselves, they were legally and ethically proscribed from doing so.

Ted further explains: "That's when I said, 'Either we build it ourselves or we go home. I don't want to go home!' We went over what the costs would be and Nolan and Al agreed that we couldn't afford to do it. I echoed my statement and said that we needed to make a decision. I said, 'If we decide to build it ourselves then we can work on how to get it done. If not, we go home.'"

In the end, none of them opted for going home. Ted said he would handle the TVs and cabinets, and Al and Nolan could work on the boards and components. Nolan and Ted then crafted a letter to Bally as well as their strategy for when Nolan went in to meet with its management.

In a move that would make Obi-Wan Kenobi proud, they convinced Bally that this wasn't the droid it was looking for. An incredible feat, considering that Bally's subsidiary, Midway, was actually very interested in releasing the game. Nolan managed to talk them out of it by simply playing both groups against each other, claiming to each that the other didn't want *Pong* so that in the end they really didn't. Per Ted's suggestion, they instead offered to replace it with another game, but only if Bally would formally reject *Pong*, returning the rights to Atari. When the formal letter came, the ruse had worked, but better than they had expected. Bally had cancelled the entire contract, including the pinball machine.

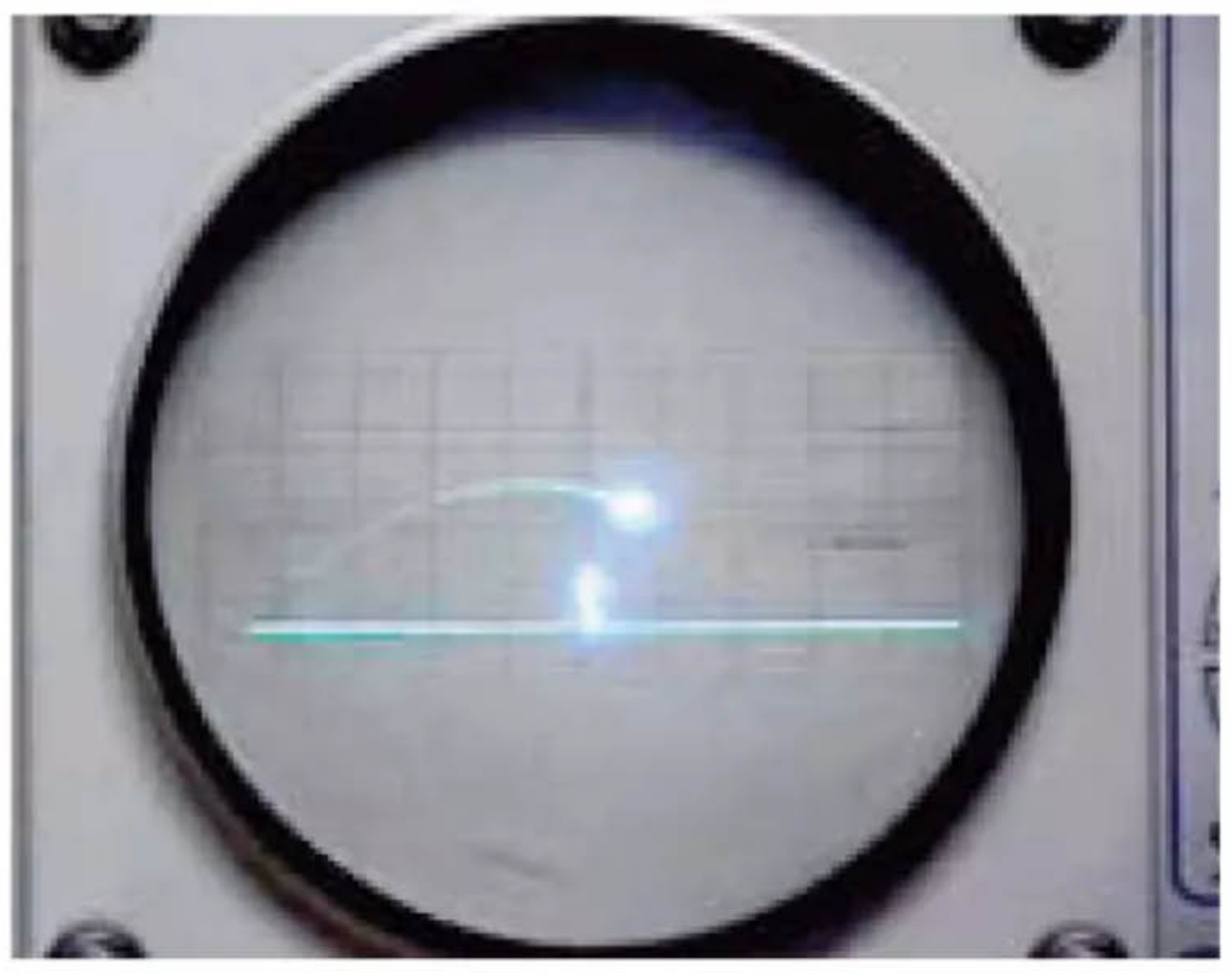
Ted set about designing the now-famous bright yellow and woodgrain cabinet and getting the television sets they'd need to modify to put in the cabinets. The plan was to make 50 *Pong* cabinets to sell, a modest amount but one that would still strain the small amount of storage space they had in which to manufacture them.

After the design for the cabinet was done, Ted started looking for someone to manufacture them

"THAT'S WHEN I SAID, 'EITHER WE BUILD IT OURSELVES OR WE GO HOME. I DON'T WANT TO GO HOME!'"

TED DABNEY ON PONG'S FUTURE

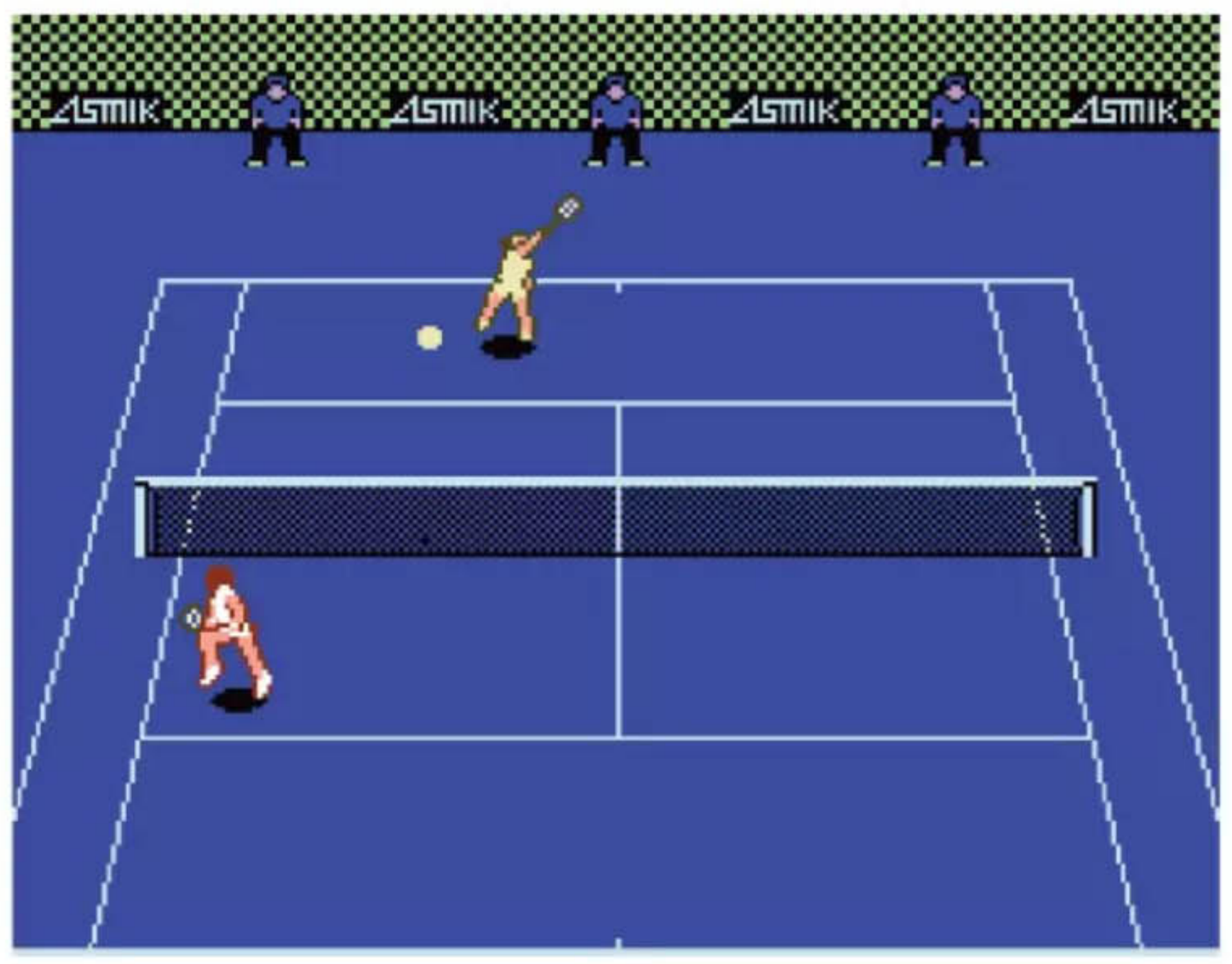
A SHORT HISTORY OF TENNIS



TENNIS FOR TWO

- **Year:** 1958
- **System:** Analogue **Computer/Oscilloscope**

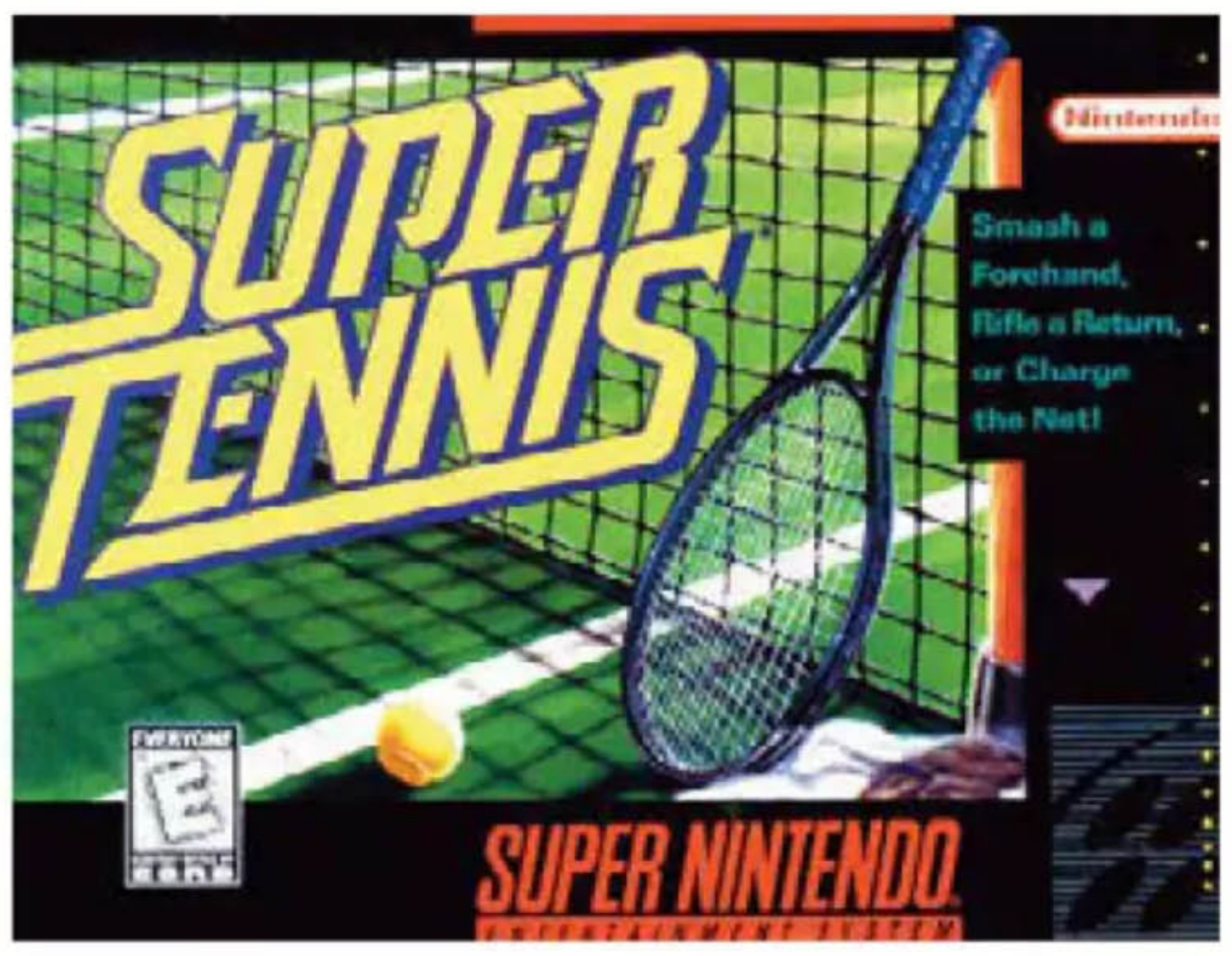
William Higinbotham fiddled around with one of Brookhaven Laboratory's early computers for calculating missile trajectories to simulate a crude game of tennis, which set things rolling.



TOP PLAYERS TENNIS

- **Year:** 1989
- **System:** NES

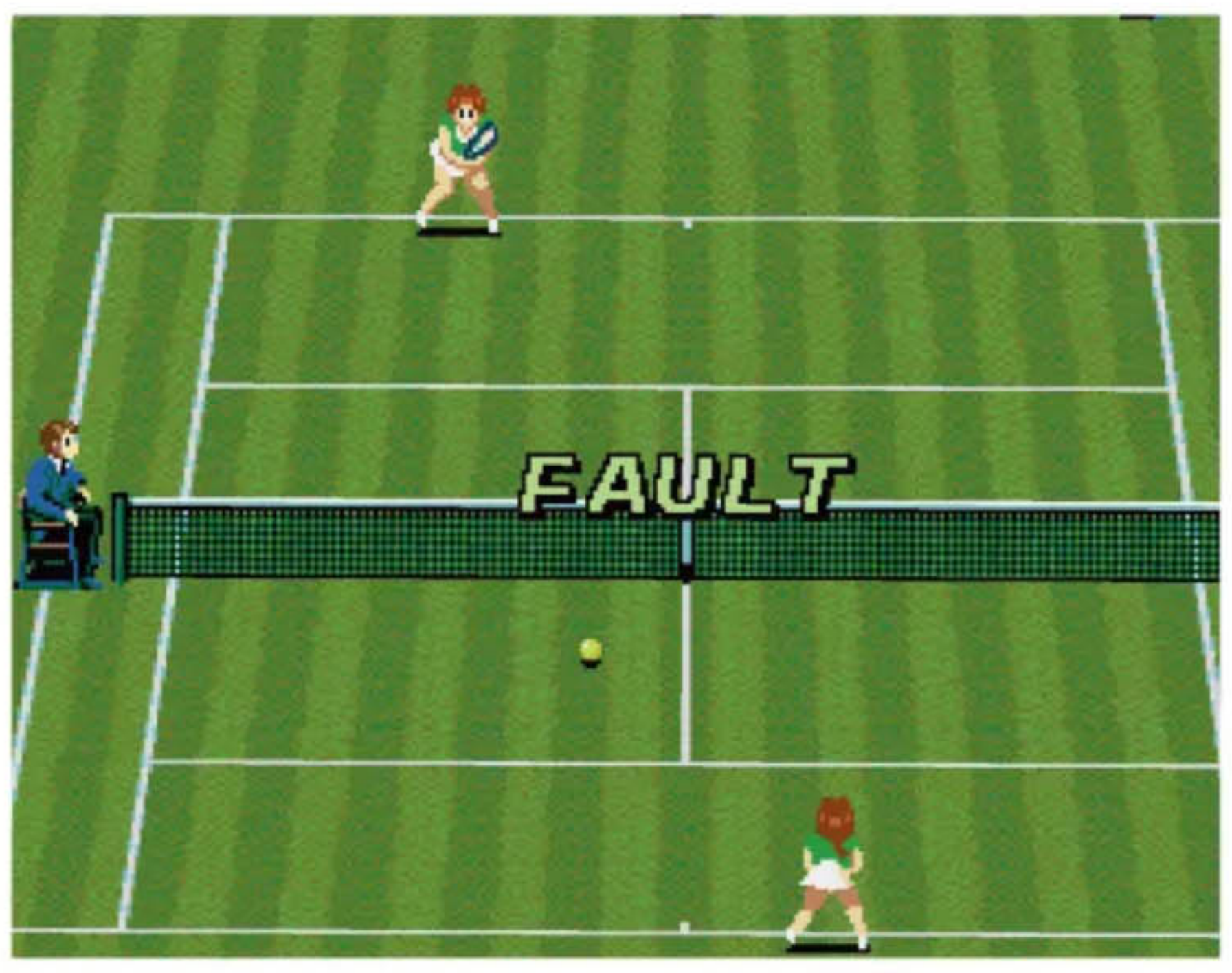
This is the earliest example we could find of a celebrity-endorsed tennis game. The players are Chris Evert and Ivan Lendl. It also allows four people to play at the same time, as long as you have the relevant NES adaptor.



SUPER TENNIS

- **Year:** 1991
- **System:** SNES

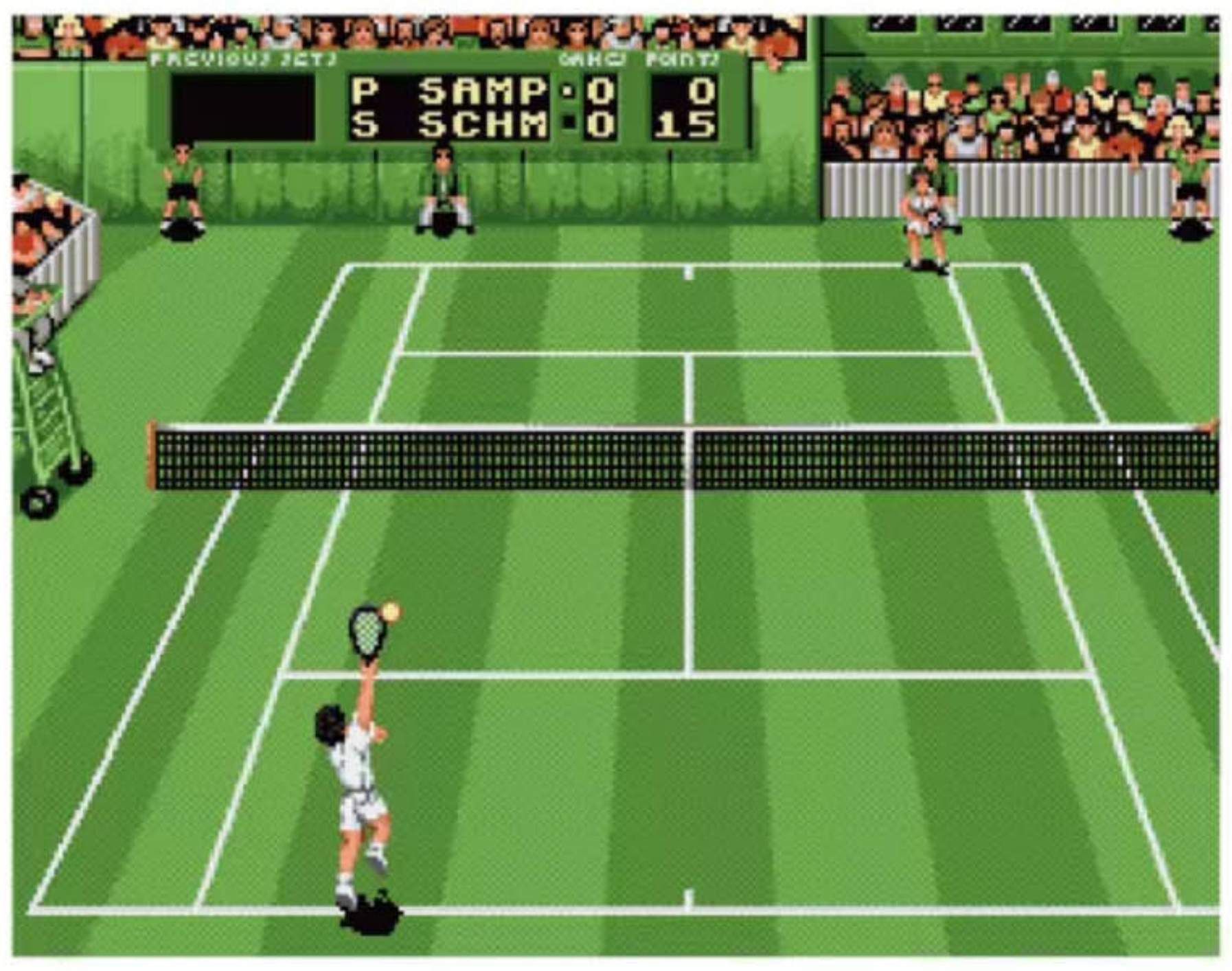
Although it's not the most innovative game, *Super Tennis* definitely deserves to be here. It's quite simply the best tennis game ever made, with a masterful selection of shots and incredibly nippy gameplay. Nice Mode 7 court effects as well.



JENNIFER CAPRIATI TENNIS

- **Year:** 1992
- **System:** MEGA DRIVE

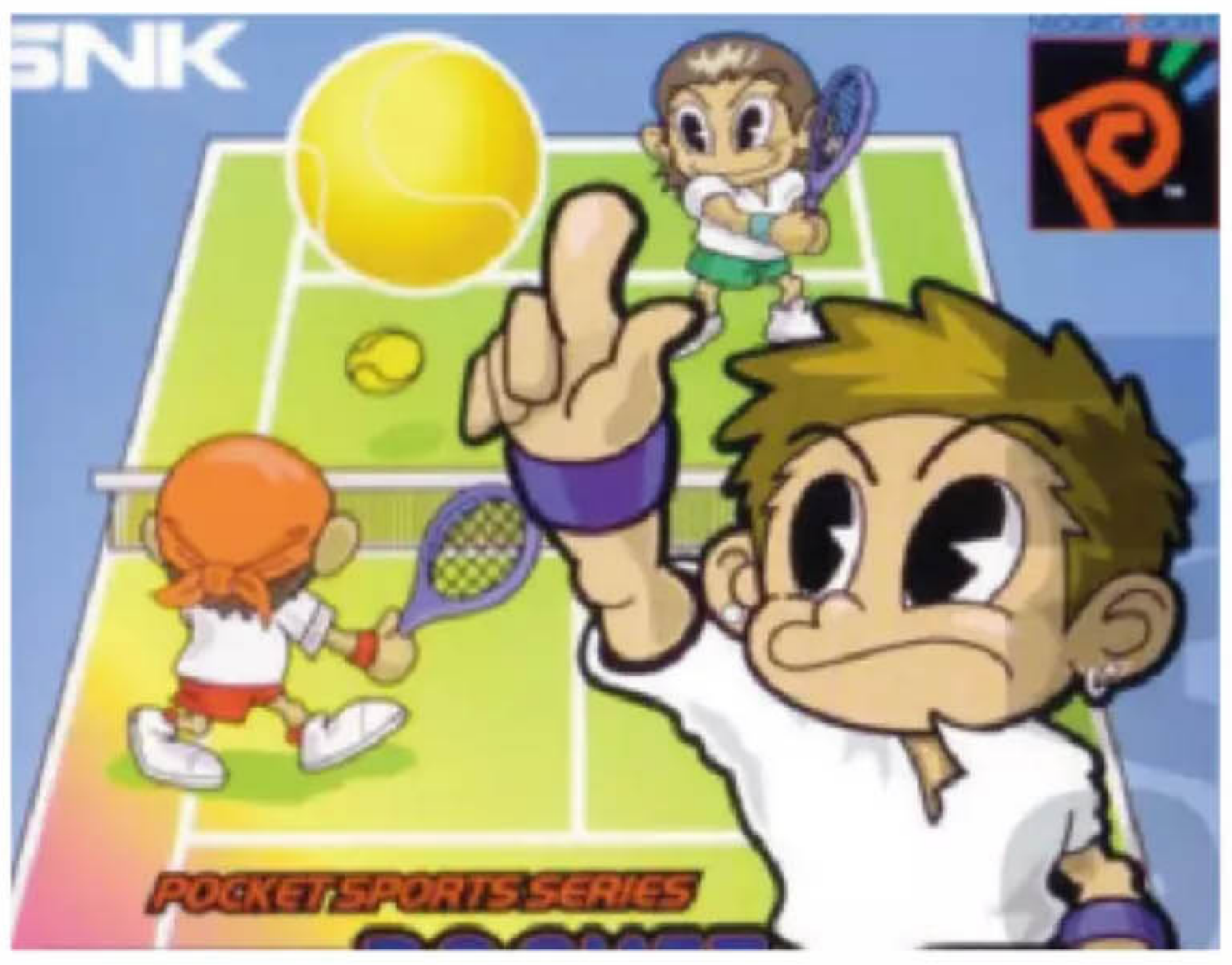
There are lots of tennis titles that focus around classic male players, but this is the only one based on a female tennis star. While it plays a decently, there are more notable titles to feature celebrity endorsements.



PETE SAMPRAS TENNIS

- **Year:** 1994
- **System:** MEGA DRIVE, GAME GEAR

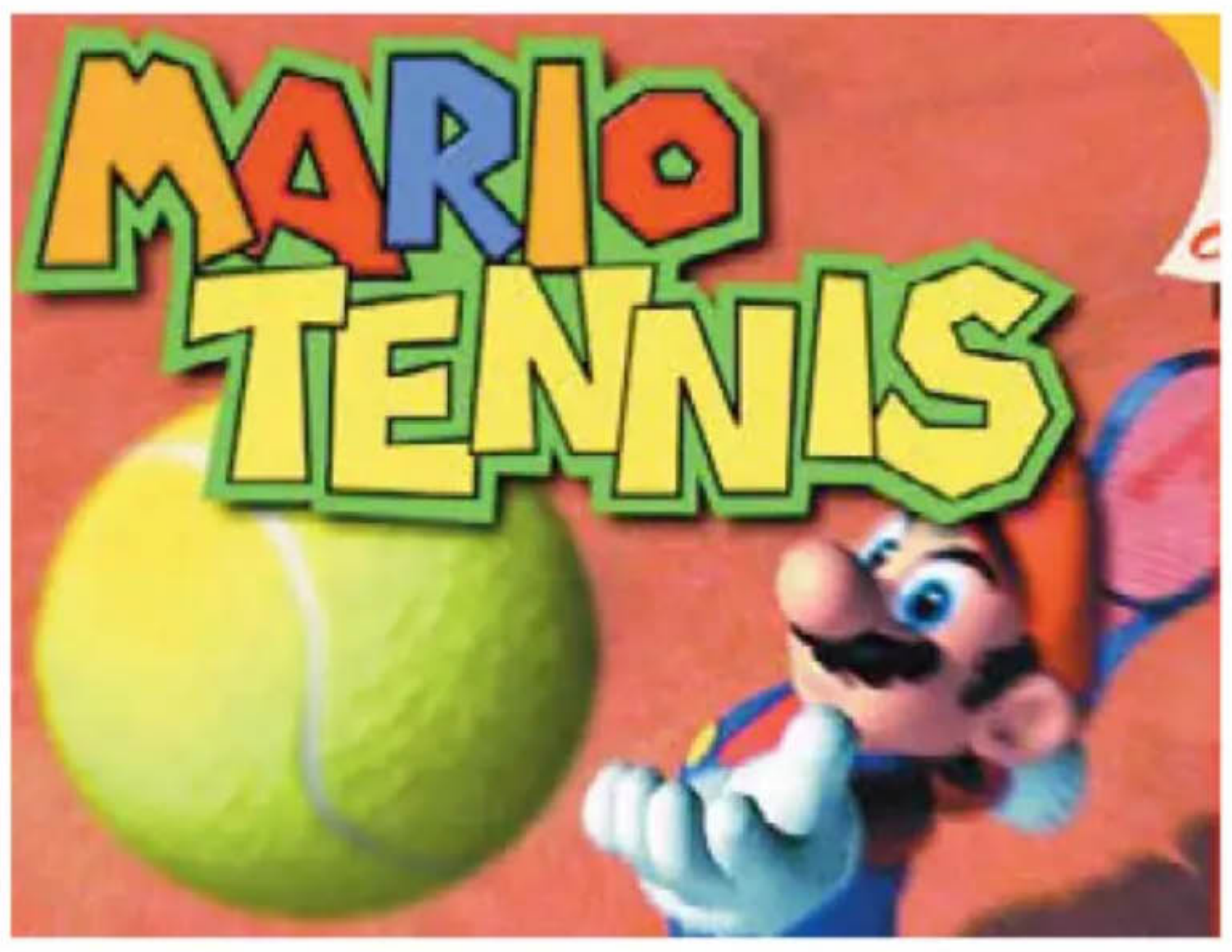
This fun offering from Codemasters featured Pete Sampras and was the first game to utilise the company's J-Cart technology, allowing two pads to be plugged into the cartridge.



POCKET TENNIS COLOR

- **Year:** 1999
- **System:** NEO GEO POCKET

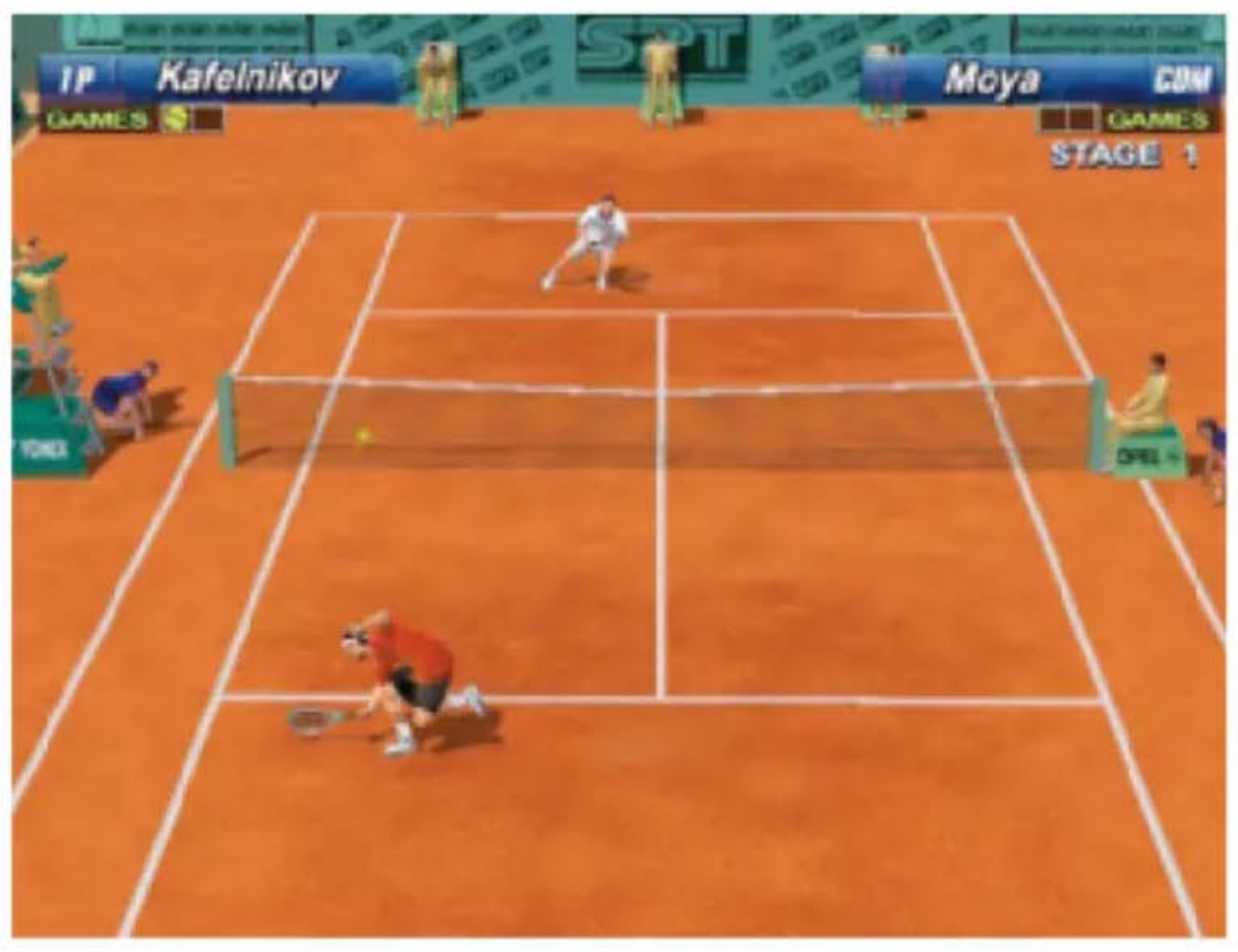
While it lacks the structure of *Mario Tennis*, this superb little offering remains our favourite handheld tennis game because it's so much fun to play. Sublime controls and an excellent two-player mode make it a classic.



MARIO TENNIS

- **Year:** 2000
- **System:** NINTENDO 64, GAME BOY COLOR

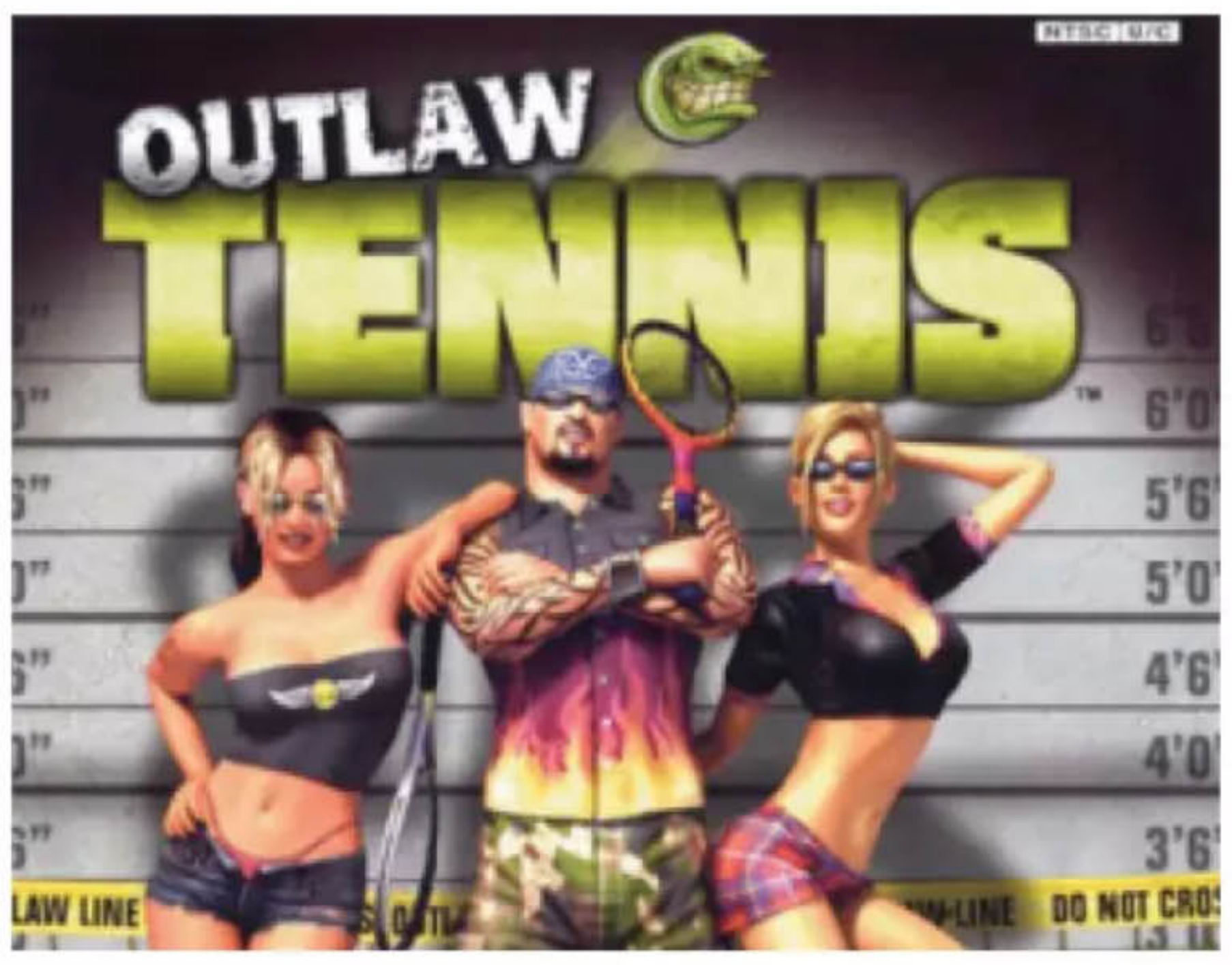
Camelot's tennis game proved that, with the right care, Mario could work in anything. Mini-games galore, excellent gameplay and a crew of Nintendo favourites made *Mario Tennis* one of the N64's best sports games.



VIRTUA TENNIS 2

- **Year:** 2001
- **System:** ARCADE, DREAMCAST, PS2

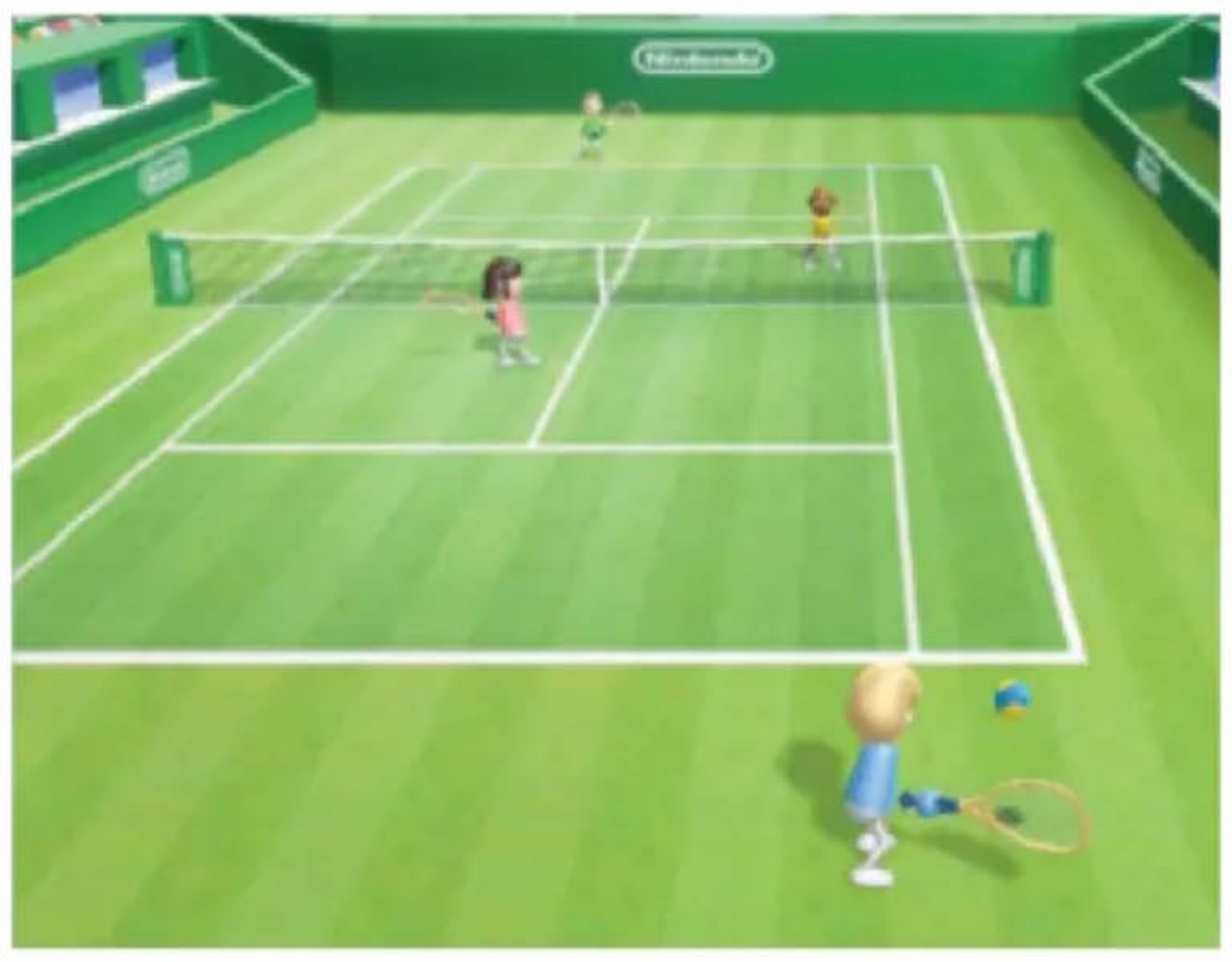
Sega's original *Virtua Tennis* was so good that it became an extremely hard formula for Sega to improve on. It managed it, though, thanks to even more players and an improved campaign mode.



OUTLAW TENNIS

- **Year:** 2005
- **System:** XBOX, PS2

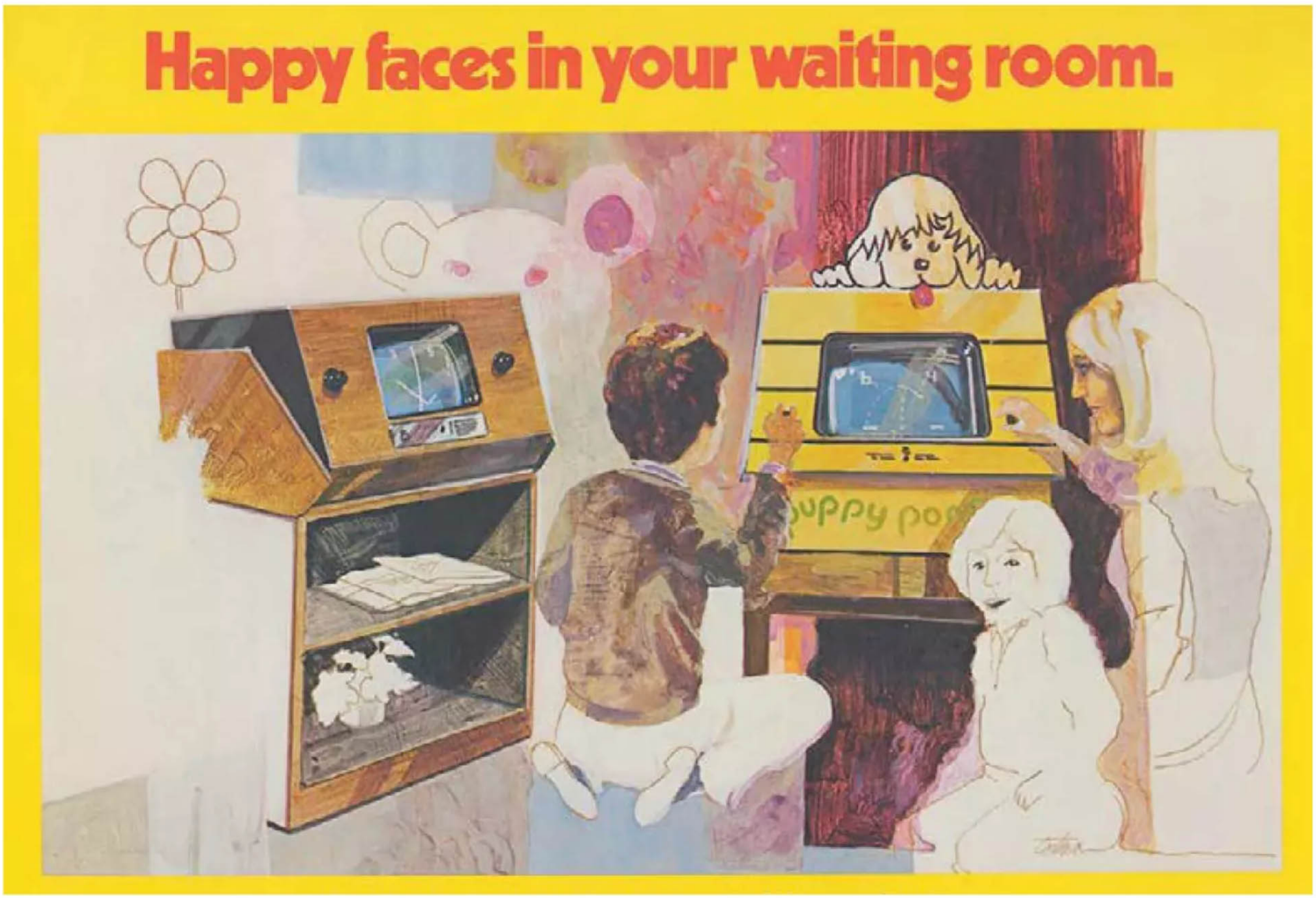
An odd tennis game, as the only endorsement isn't a player but political satirist Stephen Colbert. While it tries to shock with its cast – a PhD stripper, a convict and a Jewish ninja, among others – it plays a rather rudimentary game of tennis.



WII SPORTS

- **Year:** 2006
- **System:** WII

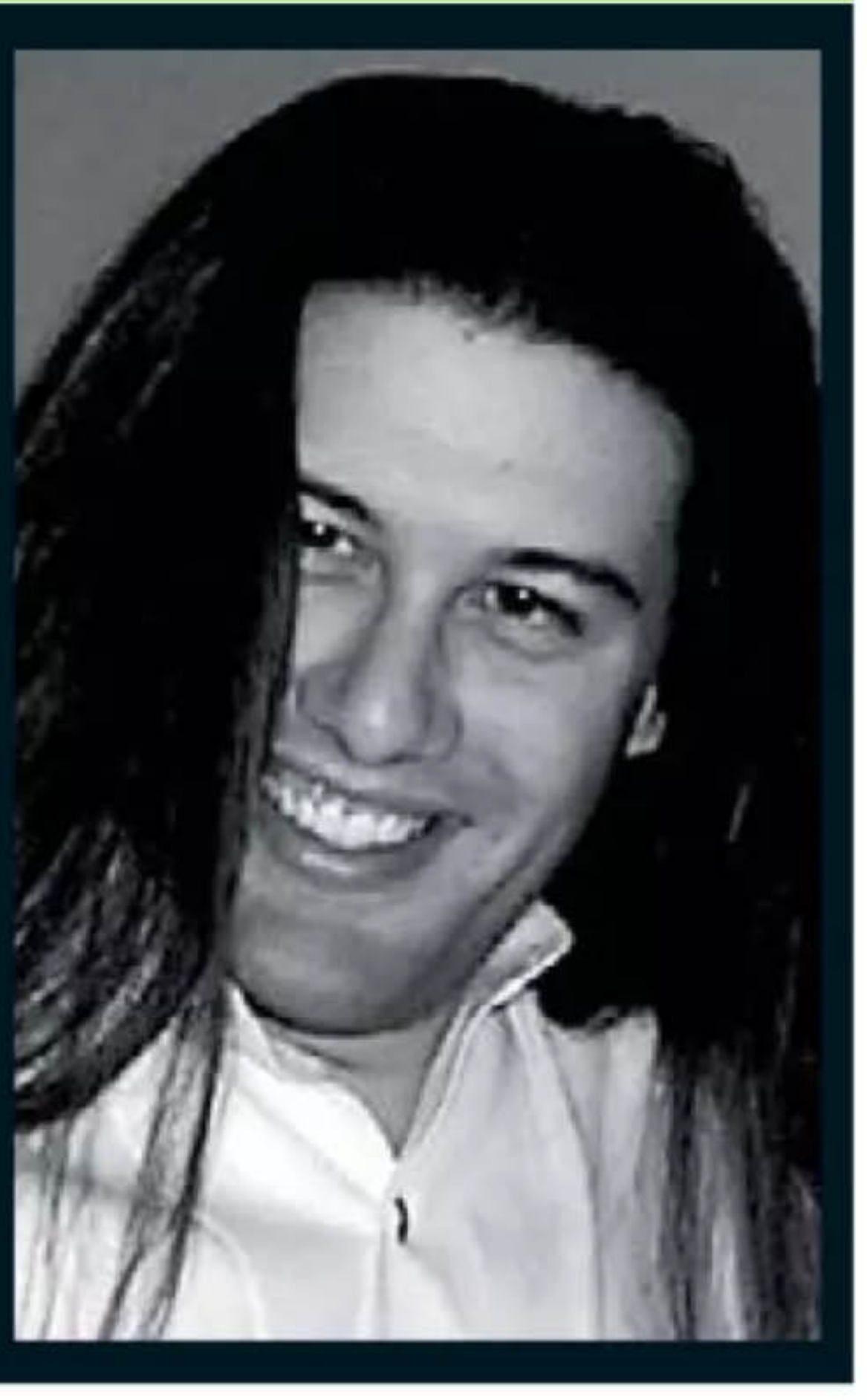
The pack-in game for Nintendo's Wii featured a truly wonderful game of tennis that really came into its own thanks to the motion controls. The sequel in Wii *Sports Resort* was better thanks to MotionPlus control, but the original remains so fun to play.


Happy faces in your waiting room.
uppy po

» In an effort to expand its locations and potential buyers, Atari promoted *Pong* to department stores and doctor's offices. Seen here is a flyer for *Dr Pong* and *Puppy Pong*, which are simply *Pong* housed in a waiting-room-friendly cabinet.

PONG MEMORIES

Pong was such a powerfully influential game that Bill Budge's first Apple II high-res 6502 program was a *Pong* ball bouncing on the screen, and it blew him away. Creating the Pong experience himself years after the original appeared was still an event of magnitude.



» John Romero,
Loot Drop

> **"WITHOUT PONG, YOU'D HAVE NO COLECO OR NINTENDO ENTERING VIDEOGAMES"**
>
> PONG'S IMPORTANCE IS CRUCIAL

in bulk. After one false start that was too cheaply put together, he found the answer in the form of PS Hurlbut, a local cabinet maker. Ted said they might not be able to pay for them all at once, but the owner said it was not a problem because of their line of credit through a local bank. Then, suddenly, two weeks later, he received a call that the cabinets were ready, to come pick them up. There was no way Ted or Nolan had the transportation, but Hurlbut delivered them – all 50 at once. Atari didn't have the room for all of them inside the small leased area, let alone room to do the work to install the components.

By chance, though, the candle maker next door happened to move out in the middle of the night, leaving a vacancy. Without asking permission, Ted used a sabre saw to cut a large hole through the wall separating the two properties. Now they had plenty of room to spare!

Ted also used his own money to pick up 50 13-inch black-and-white Hitachi TV sets that were going to be taken apart and used for the monitors inside each *Pong* unit. Costing $3,000 in total, the investment out of his own pocket was well worth it in his mind. They had a chance to make more money in the long run.

In the meantime, Nolan had a slightly easier job getting the PCB manufacturing going. He literally just walked across the lot from their rental unit to another one where a small PCB manufacturer was located. Though he and Al also tracked down sources for the rest of the parts they needed, Nolan's overall job was… well, nobody really seemed to know.

It was 27 November, and Ted and Al set about assembling the units, as did a few of the other people they had taken on at the time. But Nolan largely stood around, watching while everyone assembled. Ted walked up to him and said: "What are you doing? We're assembling these things; now it's your job to go sell them."

With what Ted describes as a "hang dog" look, Nolan went back to his office to start making calls. The price had already been decided: $937 per *Pong* unit. Picked by Ted after he saw the number on the licence plate of a car in the parking lot, it put them in the sub-$1,000 price point they wanted. Nolan returned only an hour later, looking white as a ghost. Three phone calls later, he told them that he had sold 300 units – 50 to one, 100 to another, and 150 to the last. They were in business!

Legacy

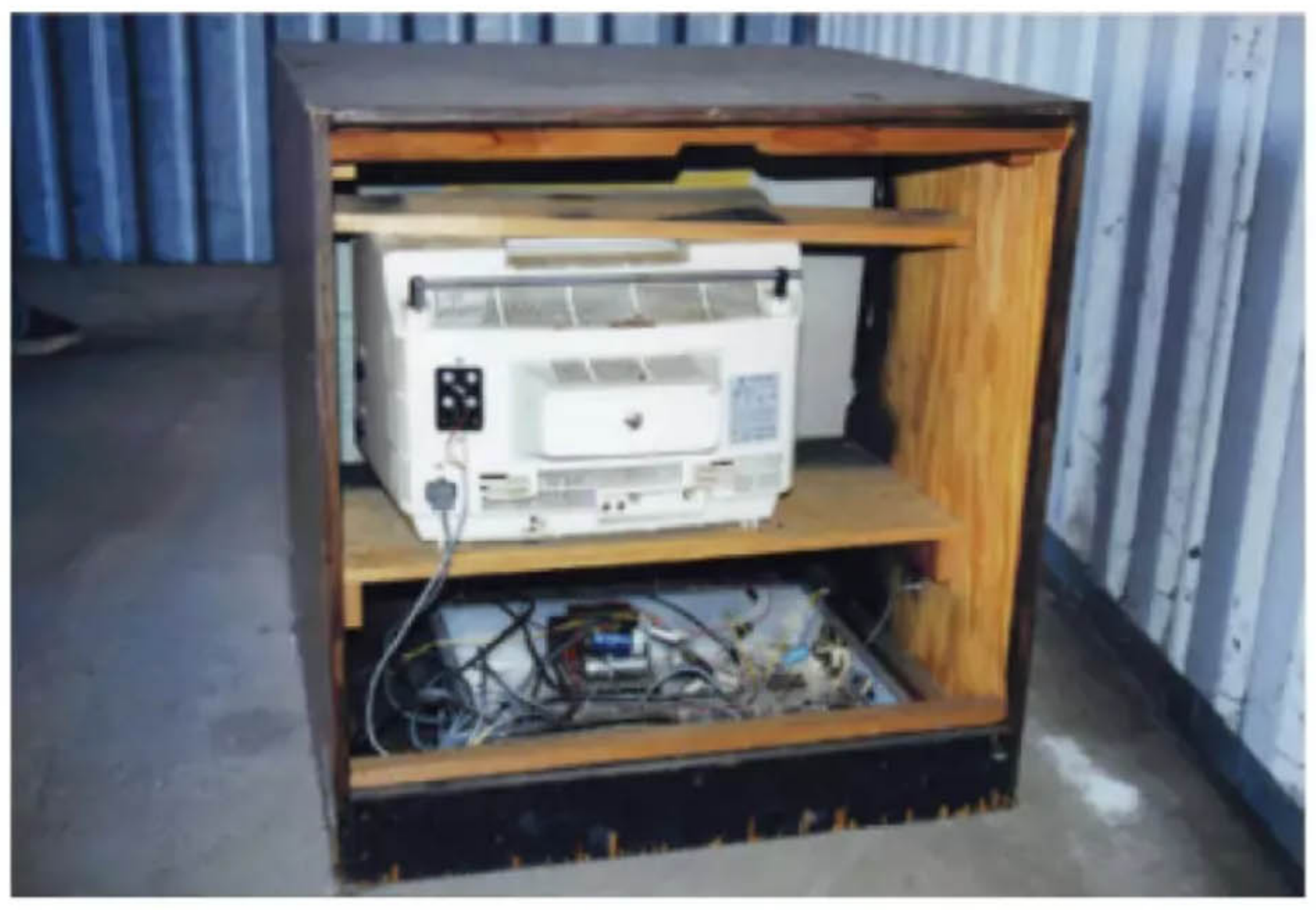
While the Magnavox Odyssey and *Computer Space* had been first in the consumer and coin-op industries respectively, it was *Pong* that would really drive the move towards videogames in the public consciousness and jump-start both industries. By June of 1973, Atari had already sold 3,500 units, which was stellar in a time when most runs of traditional coin-op games like pinball were 1,500 units. At the end of its manufacturing life, around 8,000 units were sold. This was all in the midst of an explosion of clones by other manufacturers, including Bally/Midway.

The press jumped on the new medium, whose name still hadn't been defined yet. It could be regularly seen labelled as TV tennis, TV games, Space Age games, video action games, electronic games, television skill games, video skill games, Space Age pinball and just plain videogames. But Atari's *Pong* and *Pong*-flavoured follow-ups were most assuredly in the front.

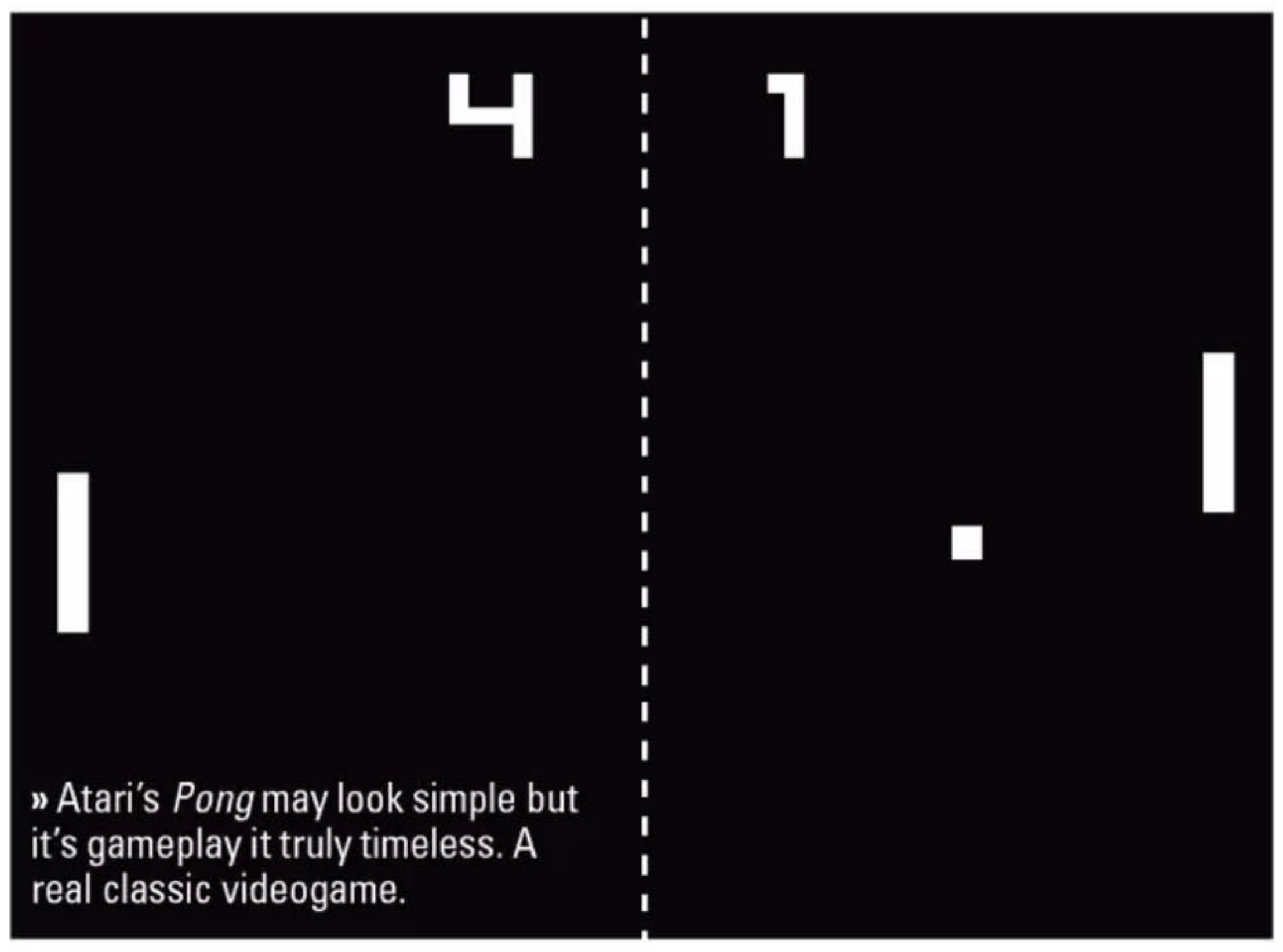
Pong reached such iconic status that it has influenced pop culture as well, becoming a recognisable symbol of the Seventies, with many appearances in movies and television shows from that decade onward.

The impact of *Pong* on the industry simply cannot be diminished. It launched the company that was synonymous with videogames and high technology, solidified and trumpeted the home videogame industry, launched entire genres that branch from it, like the *Breakout*/Arkanoid style of games.

Pong revolutionised the way we look at interactive entertainment. It created an acceptance of the



» The inside of the first *Pong*. A simple wooden shelf with a standard 13-inch black-and-white Hitachi that Ted picked up. The prototype *Pong* sits in the bottom of the cabinet.



» Atari's *Pong* may look simple but it's gameplay it truly timeless. A real classic videogame.

amusement industry at a time when it was associated with organised crime and back-room bars, and showed the promise of the future of high technology as it entered the public consciousness.

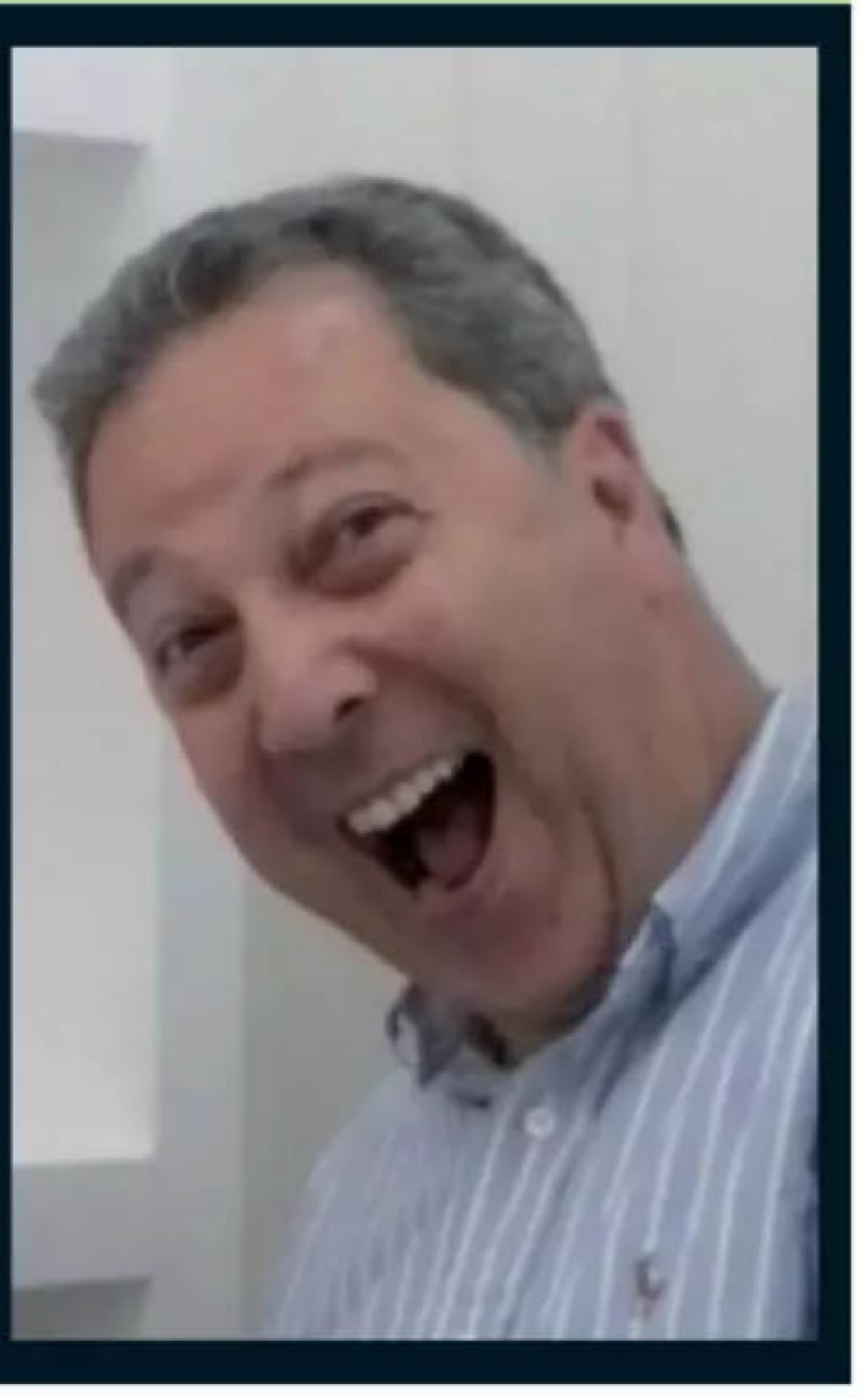
Without the impact of *Pong*, you'd have no companies like Coleco or Nintendo entering videogames, both of which started with clones of the game. It was Atari's Japanese coin-op division, which started out making *Pong* machines in Japan, that was sold to Namco to become its own videogame division. Likewise, jukebox company Konami was inspired to enter the videogame industry over the success of *Pong*.

With its recognition in museums and archives, *Pong's* importance to industry and culture has come to its highest level. And now, here we are, 40 years later, paying homage to the game that started as a warm-up and truly warmed up the industry.

PONG MEMORIES

Pong was probably my most desired toy that I never actually got. i loved the game – used to play in arcades – but it was always that littlt bit too expensive to buy. You can imagine my awe when I actually got to meet and become friends with Nolan Bushnell! Life is funny sometimes.

» Gary Bracey, Ocean Software

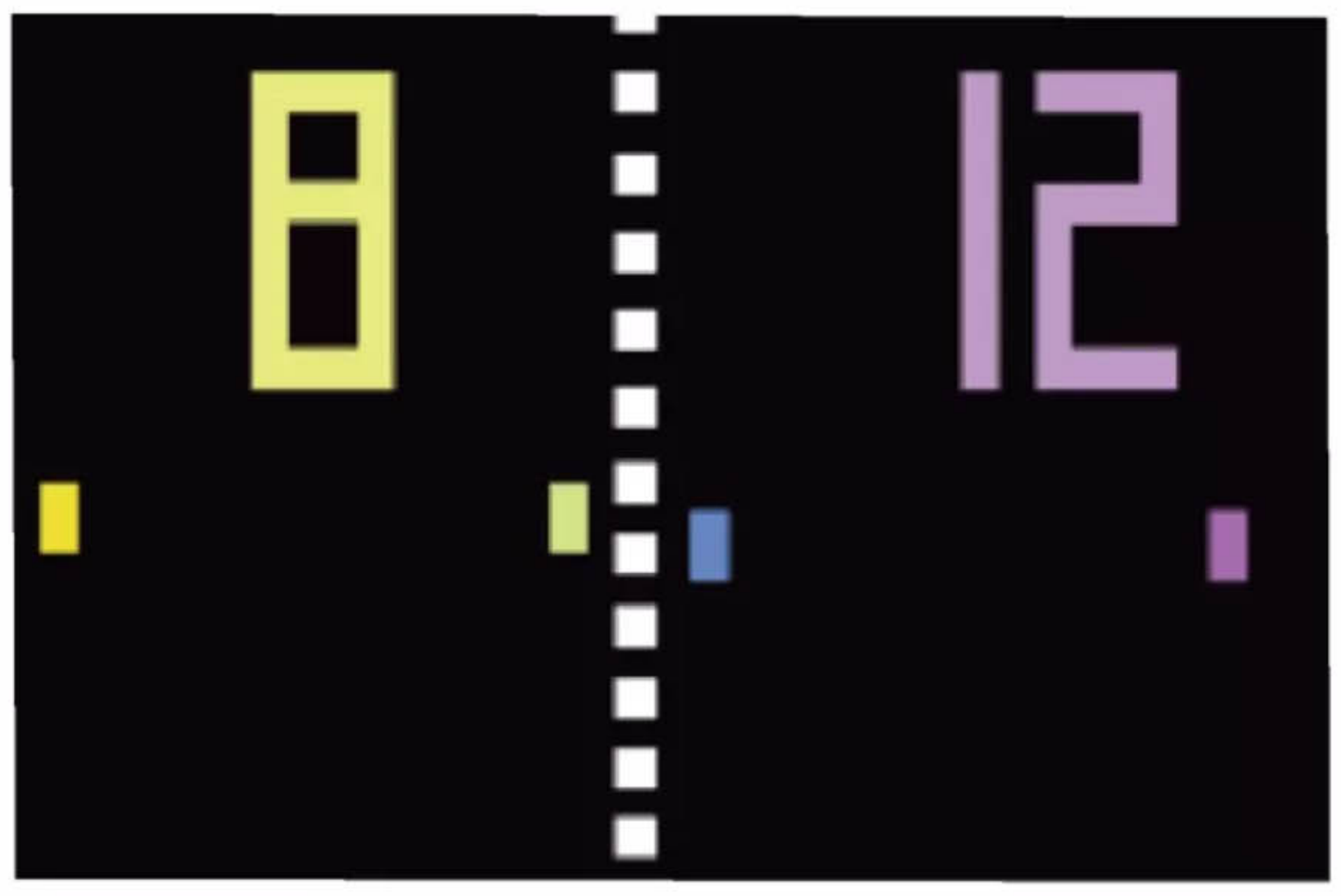


PONG SEQUELS

PONG DOUBLES

SEPTEMBER 1973

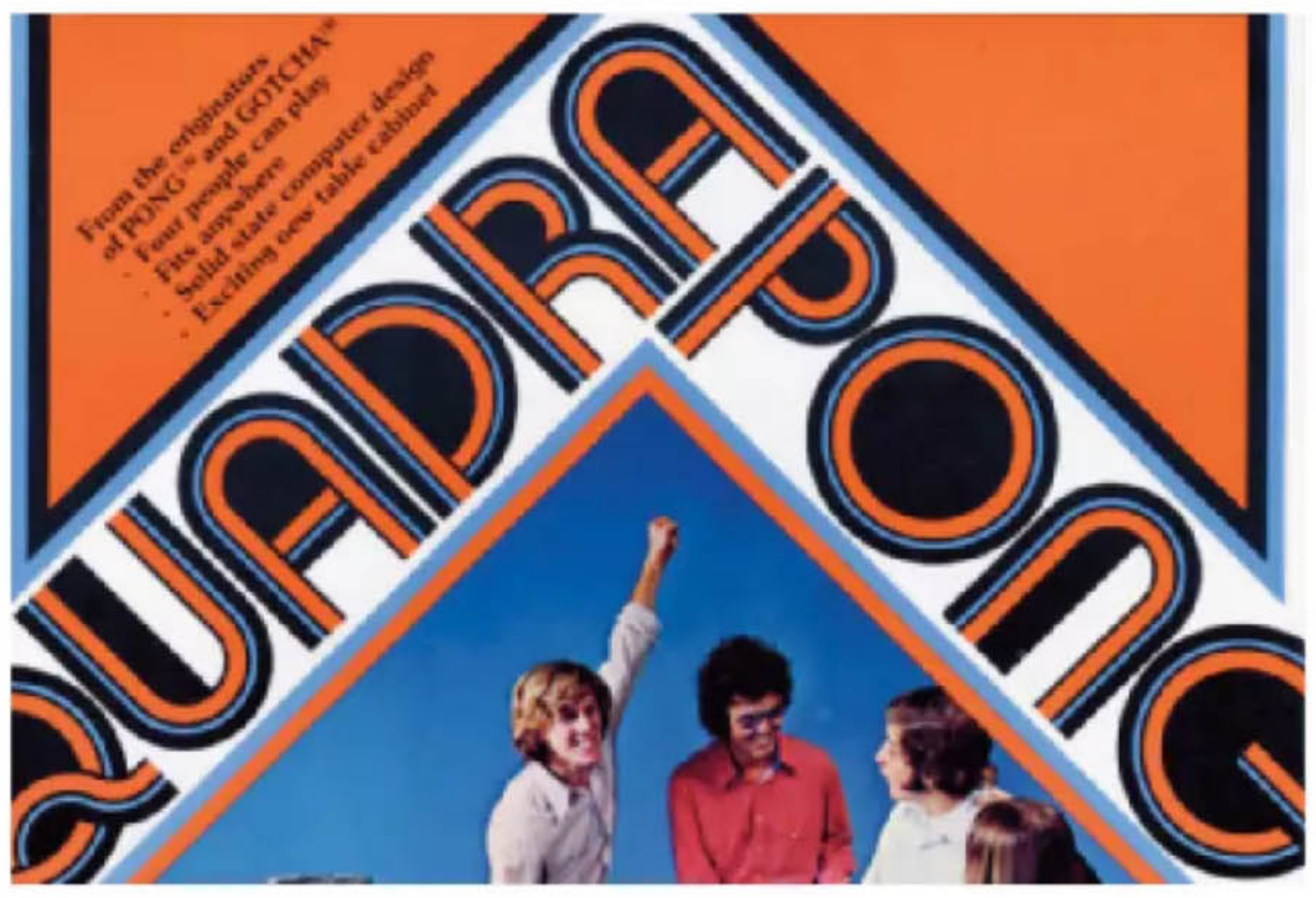
This was the first follow-up to *Pong*. *Pong Doubles* moves the game into a four-player variant by re-creating the doubles tennis format. Four paddles controlled by four separate spinners create a unique co-operative version of *Pong*. Needless to say it proved to be quite popular.



SUPER PONG

FEBRUARY 1974

This adds three paddles to the player's spinner and random starting points for the ball's serve, giving for more variety to the gameplay. The three-paddle horizontal format was later leveraged vertically in games like Atari's *Avalanche* and Activision's *Kaboom!*


From the originators of PONG™ and GOTCHA™
· Four people can play
· Fits anywhere
· Solid state computer design
· Exciting new table cabinet
QUADRAPONG

QUADRAPONG

MARCH 1974

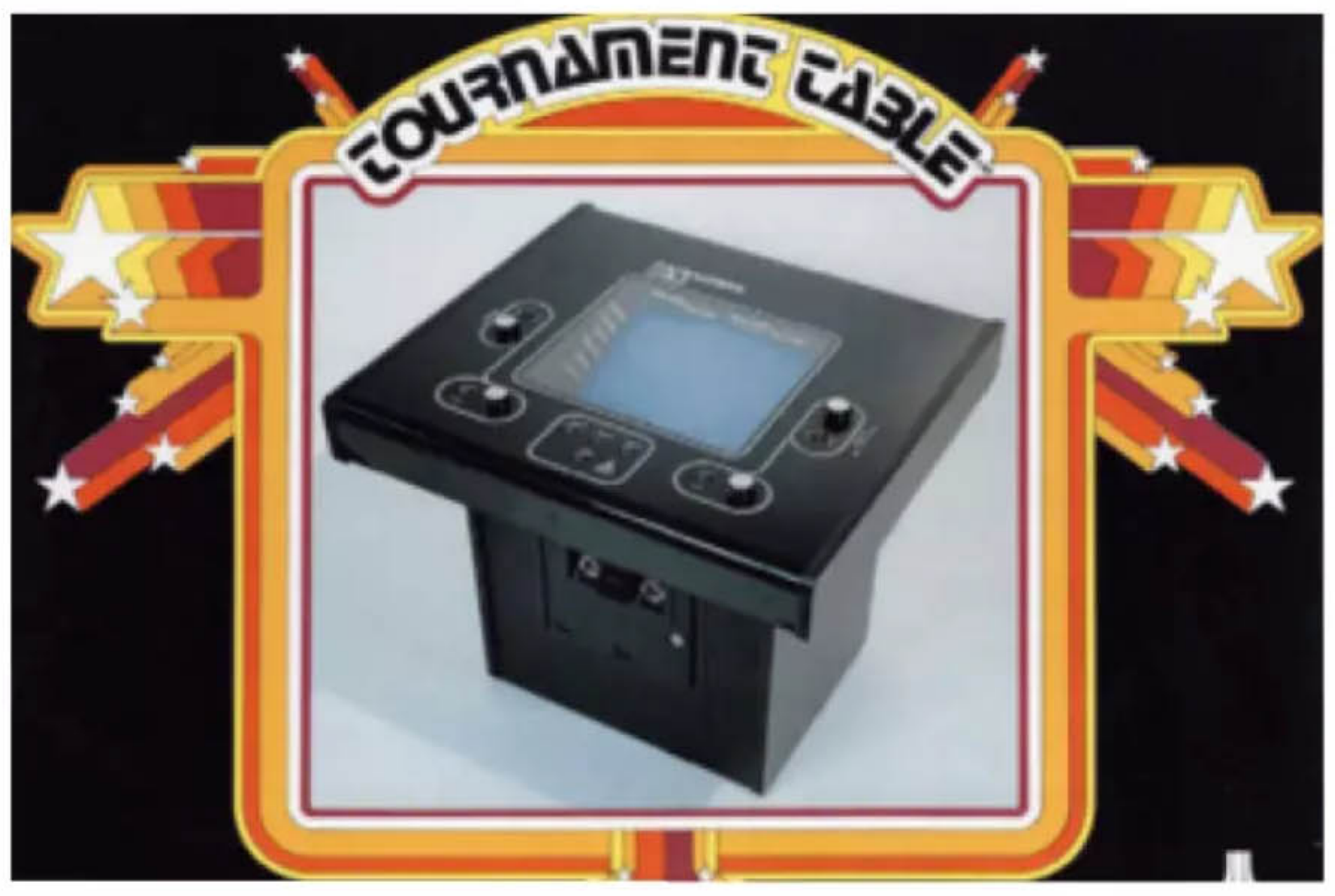
This is another move by *Pong* into the four-player realm, which was done to ensure its popular game stayed fresh. In this version, each player guards their own goal with their individual paddle. The player can only miss four times before their goal closes up and they're out.

PINPONG
PINPONG
FLIPPER
FLIPPER

PIN PONG

OCTOBER 1974

The first pinball videogame, and it was done *Pong*-style. It was still just a ball and paddle, but in this case the flippers were the paddles. There are no real flippers on screen; an image of a paddle angled to the real horizontal one is quickly substituted to create the illusion. Very clever.



TOURNAMENT TABLE

MARCH 1978

This is a collection of all of Atari's paddle-and-ball games in a single cocktail-style arcade cabinet. *Breakout*, *Quadrapong*, *Foozpong*, *Handball*, and multiple variants of *Soccer*, *Hockey* and *Basketball*. Plenty of variety and similar things would soon start appearing in the home.

THE MAKING OF SPRINT 2

AS ONE OF ATARI'S FIRST MICROPROCESSOR GAMES AND THE ANCESTOR OF SUBSEQUENT TOP-DOWN RACERS, SPRINT 2 REPRESENTED A HUGE SHIFT IN ARCADE GAMES. CO-DEVELOPERS LYLE RAINS AND DENNIS KOBLE RECALL FOR US THE BIRTH OF A TRUE CLASSIC

Videogames were going through an exciting change in the late Seventies and early Eighties, with developers using all sorts of clever tehncical tricks in order to make their hardware sing. We were keen to find out how Atari formed the blueprints for one of gaming's earliest genres - the top-down racer, which would spawn numerous imitators.

What can you tell us about *Sprint 2's* origins? Where did the concept come from?

DENNIS KOBLE: I can't exactly remember where the game idea came from, except that I didn't come up with it. I was hired to do a job and that's the job they gave me. I recall being handed a quad-ruled pad and becoming immersed in assembly 6502 programming, and I believe the entire game was done in 4K.

The team consisted of myself, engineer Howard Delman, and a super tech, Dan Van Elderen, who later became president of Atari Games. And then there was Lyle Rains, senior game guru/engineer, who had a brilliant sense of gameplay and often made small but critical suggestions regarding how to improve the game.

The facilities were small and old and I shared the front office near the entrance with Howard and Dan. The office was so cramped that if we put our feet up on our desks, there wasn't room left to enter or leave! When it rained, the water would seep under the wall and soak the carpet, giving it a nice mildew smell…

LYLE RAINS: I've no clear memories on the genesis of *Sprint 2* either, but I can guess, with a certain degree of confidence, that it was mostly a matter of Atari never wanting to be too far from the release of a new and improved driving game.

The *Gran Trak 10*, *Gran Trak 20*, *Indy 800* and *Le Mans* games had been consistent moneymakers for Atari and its customers. By 1976, we were working with microprocessor-controlled game systems, and would have wanted an updated product in the category. Although visually related to the Gran Trak games designed for Atari by Cyan Engineering, the electronics system was completely redesigned for microprocessor control.

Since this was one of Atari's first mass-produced microprocessor games, did you find the technology liberating or restrictive? Were there things you had to avoid due to technical limitations?

LR: It was so early in the microprocessor game era that we didn't know what we didn't know. And the processors were so slow and limited that we continued to solve some problems in hardware that would later be handled by software alone. But the key difference was the amount of tuning you could apply to the gameplay that would have been impractical in the hardware-design era. *Sprint 2* was faster and more exciting than its predecessors, because we had more freedom.

> "IT WAS SO EARLY IN THE MICROPROCESSOR ERA THAT WE DIDN'T KNOW WHAT WE DIDN'T KNOW"
>
> LYLE RAINS

What was the thinking behind the controls – steering wheel, four gears – and *Sprint 2's* timer-based gameplay as opposed to the lap model later used in the likes of *Super Sprint*?

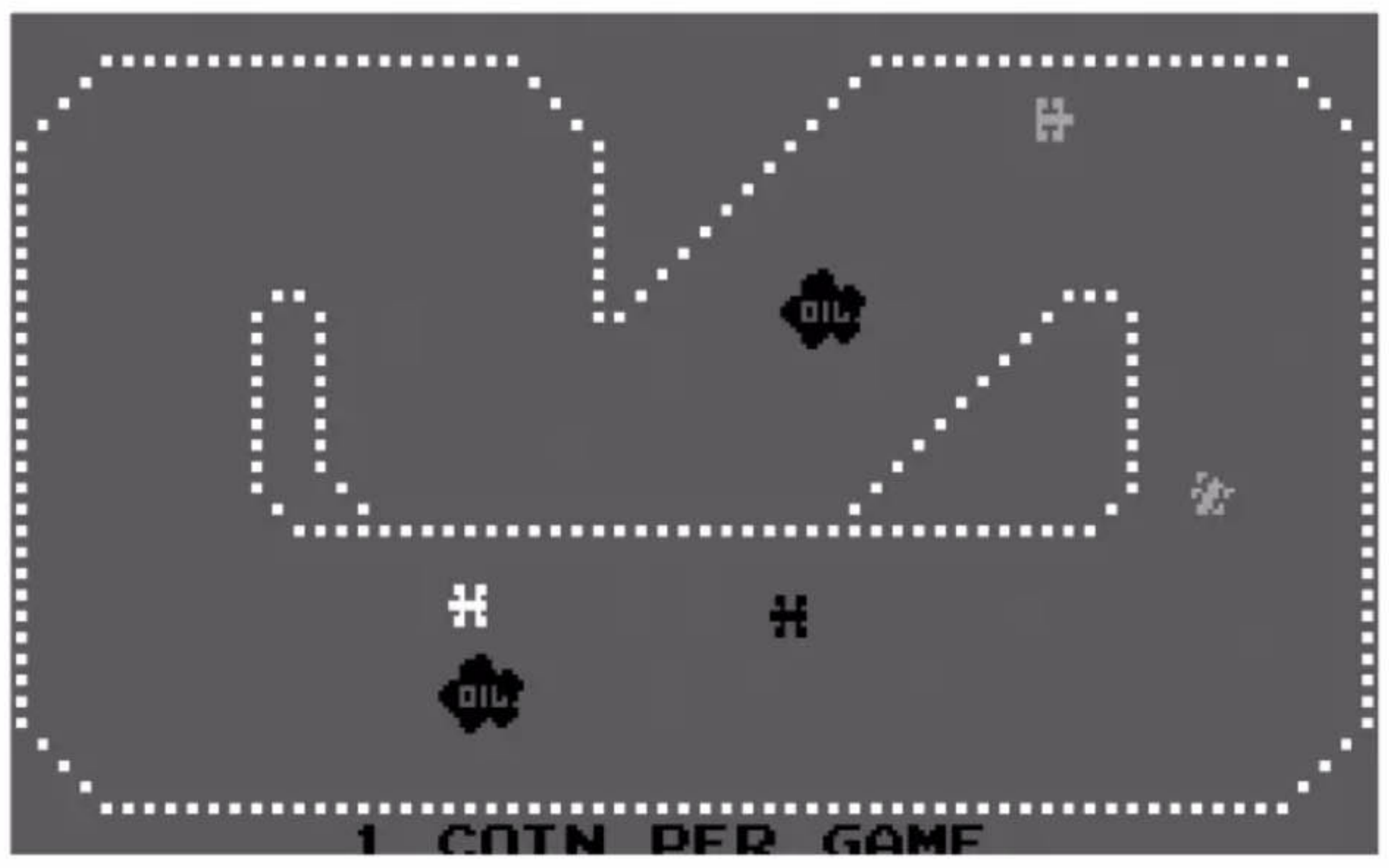
LR: As I said, *Sprint 2* was styled as an update of previous games, so we kept what worked and changed what didn't. Nobody liked going backwards in *Gran Trak 20*, so we got rid of reverse and went to a four-speed gearbox. This also got rid of the need for a brake pedal, because lifting off the gas was the brake. *Sprint 2* was all about drifting around the track.

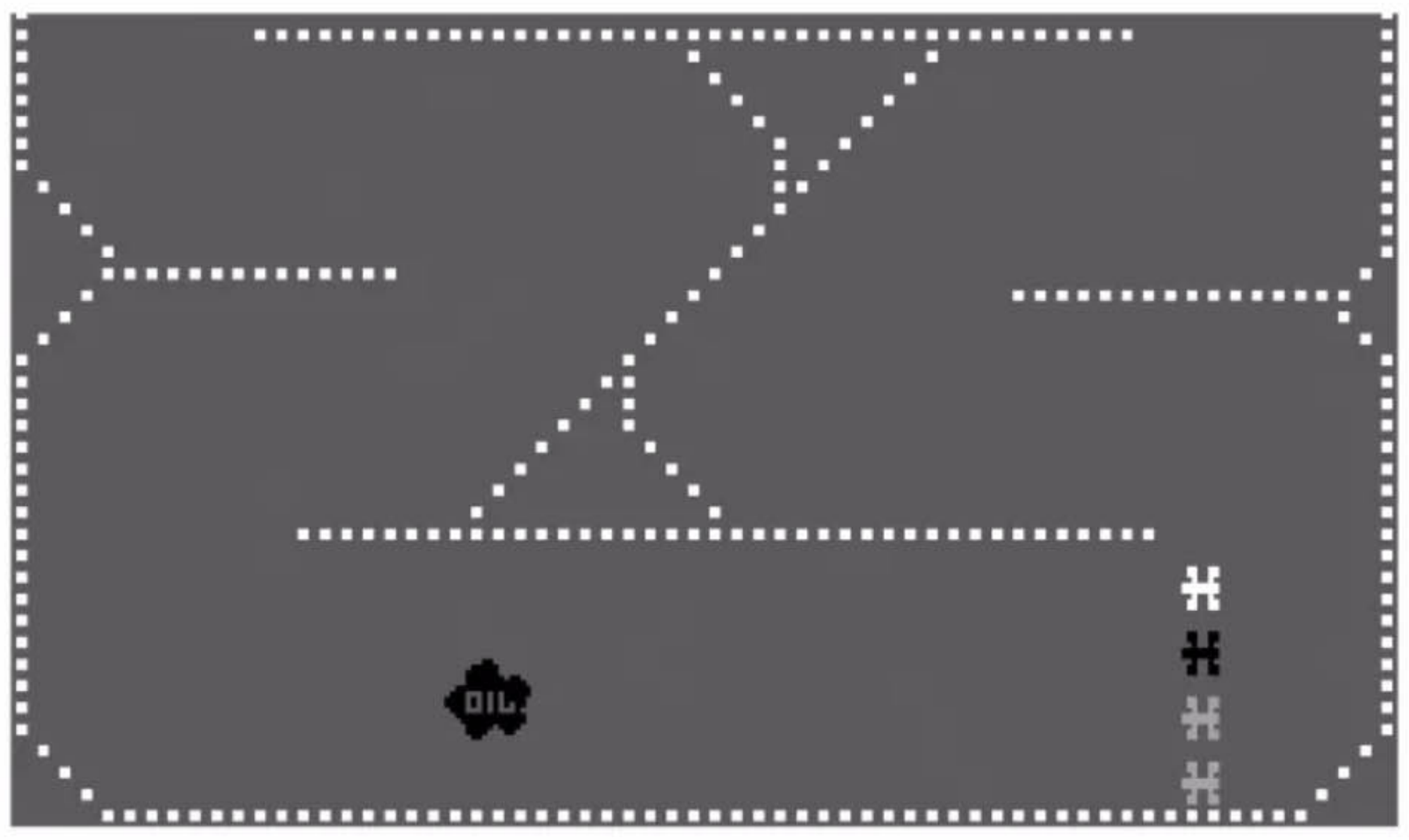
As for the timed game, that was the same as *Gran Trak 20.* Lap-based games and lap qualifiers just hadn't occurred to us yet.

DK: The gameplay mechanics were straightforward in those days. You raced around the track and either won or lost and eventually the game timed out. The goal was to give you a couple of minutes of fun gameplay for a quarter. The game options were simple, set by switches in the cabinet. I think we included four coin modes, some timer settings, and a switch-controlled oil slick, which was a little graphic made up of four eight-by-eight sprites that caused you to skid when you drove over it.

IN THE KNOW

- **Publisher:** Atari, Inc
- **Developer:** Kee Games
- **Platform:** Arcade
- **Year Released:** 1976
- **Genre:** Racing
- **Expect to pay:** £1,000+ ($1500+)





SPRINT SEQUELS

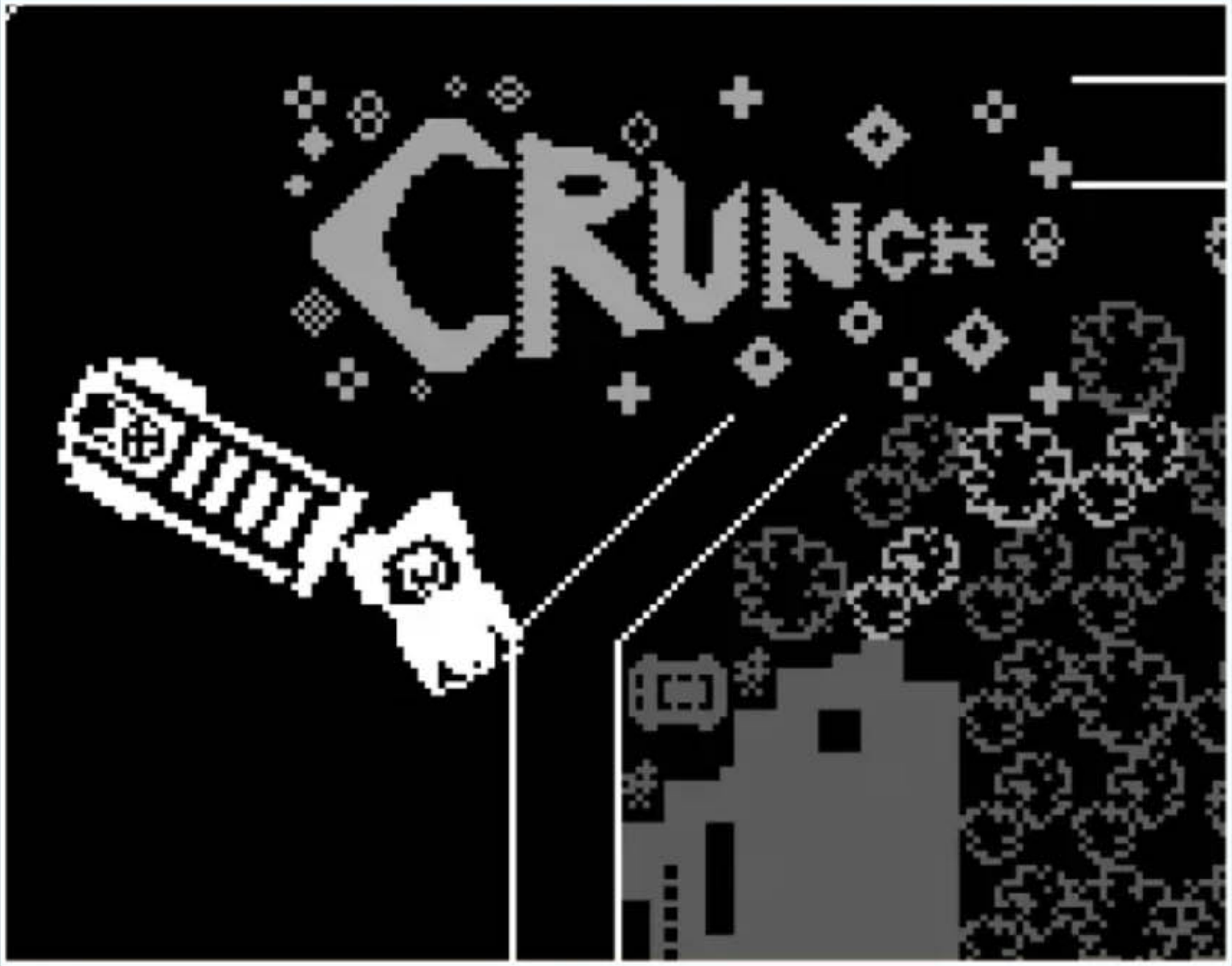
Before *Super Sprint* arrived in 1986, there were three other *Sprint* sequels that appeared in arcades. "*Sprint* was done later with minor code changes for its randomised track and single set of controls," says Dennis. "*Sprint 4* and *Sprint 8* were done by Steve Calfee, another programmer at Atari, using my code base." By that time, Dennis wasn't involved, since he'd become manager of the VCS group. "But the game series was very popular, and I collected royalties for years, even though I was in the consumer division. I was the only non-coin-op person to make a quarterly trip to coin-op to collect my cheque, and they always gave me a hard time about that!"

DEVELOPER HIGHLIGHTS

Avalanche
System: Arcade
Year: 1978

Fire truck (PICTURED)
System: Arcade
Year: 1978

Asteroids
System: Arcade
Year: 1979



LR: The oil slicks were also present in *Gran Trak 20* on the tracks, they appeared as dark rectangles on the course – we just made them look a bit prettier!

What was the thinking behind the computer-controlled cars, and how did you deal with the AI in 1976?

LR: From a player's standpoint, the addition of computer-controlled cars was a major feature. They weren't truly competitive but added moving obstacles to the racing action, and improved single-player racing. We didn't use the term 'artificial intelligence' for computer-controlled elements at that time, as such concepts were still in their infancy.

There had been a pseudo-random flying saucer in *Computer Space*, and I'd engineered a simple hardware AI in *Jet Fighter* two years earlier. The enemy jet would fly straight, then bank pseudo-randomly. If he sensed you were in the quadrant in which he was aimed, he would fire. It was surprisingly effective. That was my total experience with game AI up to that point.

Rather than have the *Sprint 2* AI cars fixed on rails, we wanted something that seemed less repeatable. I came up with a concept for creating a map of vectors to tell the AI cars which way they should drive. They would align themselves to the current vector and drive themselves around the track in a non-repeating path. There was a switch you could set that would show arrows on the racetrack, so you could watch the automatic steering in action.

How did you go about creating *Sprint 2's* graphics and sound?

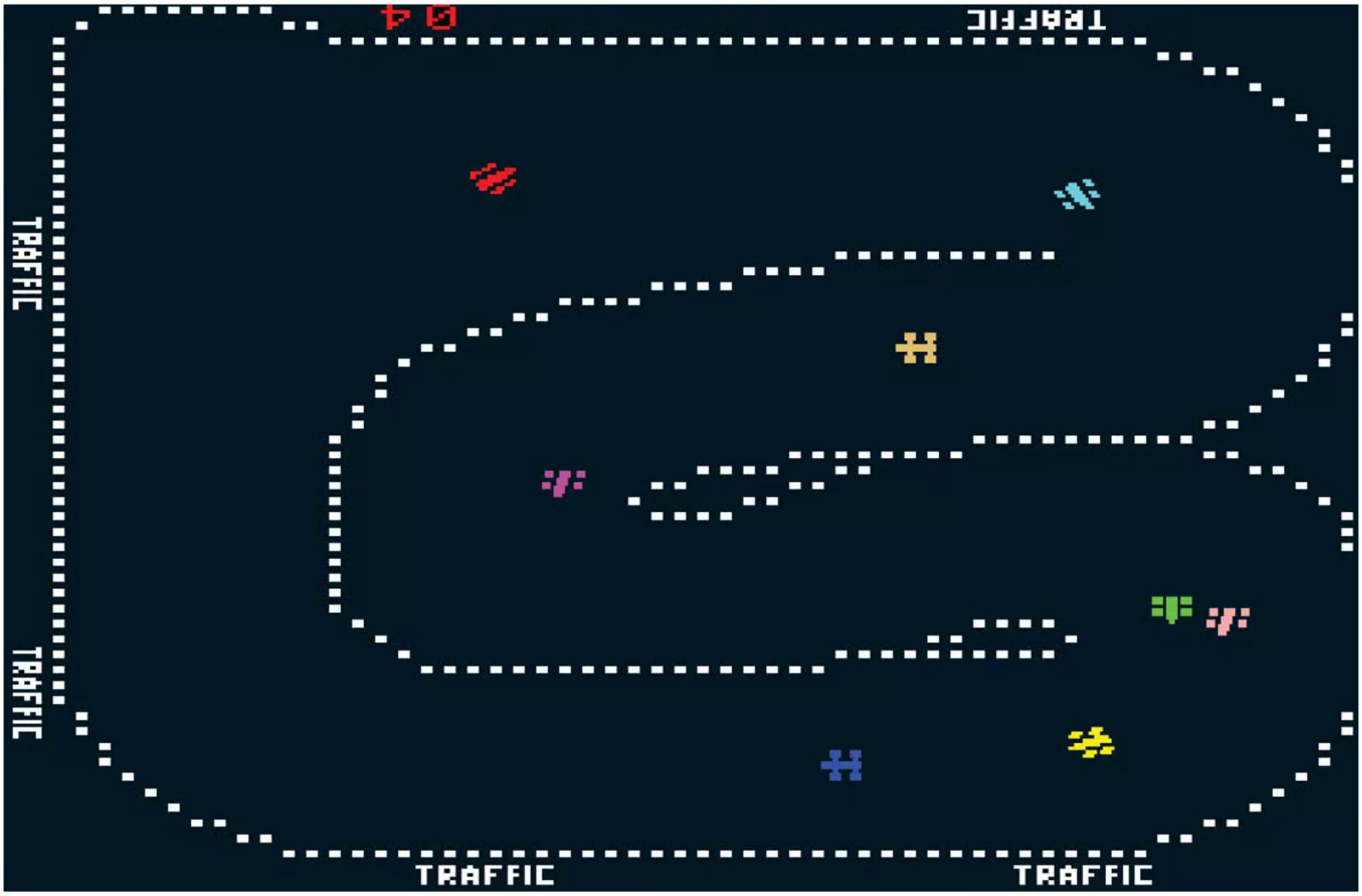
DK: For graphics, I was given a 'standard issue' pen and quad-ruled pad and drew everything, based on the hardware constraints – eight-by-eight sprites, for instance. Artists at the time only did the side panel and control panel artwork – they weren't involved in a game's creation!

The sounds were done by Howard Delman, sitting there with a variety of resistors and a soldering gun. He'd make a beep and I would say, 'That's too high,' so he'd substitute a different resistor and I'd say, 'That's too low,' and so on – very high-tech!

That's a fantastic piece of trivia Dennis. Finally, how did you go about testing the actual game and its gameplay?

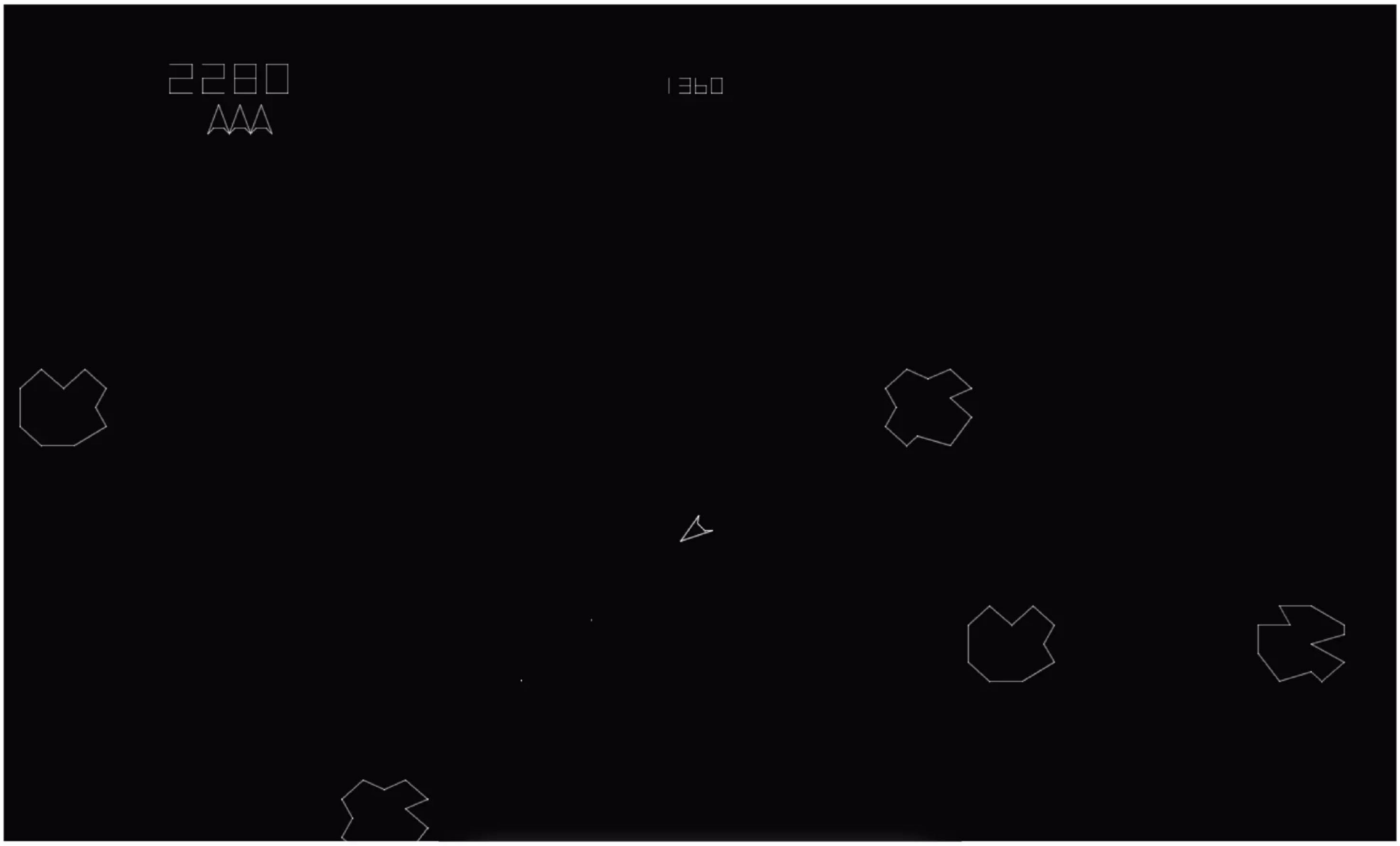
LR: We'd spend hours playing these games during lunch hours and after hours. Standing on one's left foot for long periods of time – as your right foot was on the pedal, left hand on the wheel and right on the gearstick. Thankfully, I still have my original hips and knees, so I guess it wasn't too bad!

» The neon-coloured *Sprint 8* added complexity in the form of more cars, tougher tracks and a brake pedal.



THE MAKING OF ASTEROIDS

UNDER ATTACK FROM TAITO'S SPACE INVADERS, ATARI RESPONDED WITH ITS OWN TAKE ON INTERSTELLAR COMBAT. TO MARK ASTEROIDS' 33RD ANNIVERSARY, PAUL DRURY DECIDED TO SPEAK TO ED LOGG, HOWARD DELMAN AND LYLE RAINS ABOUT THE GAME'S CREATION AND ITS SUBSEQUENT IMPACT ON VIDEOGAMES



IN THE KNOW

- **Publisher:** Atari Inc
- **Developer:** In-house
- **Platform:** Arcade
- **Year released:** 1979
- **Genre:** Shoot-'em-up
- **Expect to pay:** £500+ ($1000+)

» Ed poses with a special version of his famous creation.

It's late-summer 1979 and Ed Logg is preparing for a trip to Old Sacramento, California. He packs the retrofit kit for Atari Football, designed to upgrade the plays and prolong the game's arcade life. Joining him on the journey is colleague Collette Weil, but Ed decides to take another companion along for the ride: the project he's being working on since the spring.

Once at the arcade, his baby is carefully placed among the rows of blinking cabs. There's no fancy silk-screen and the cabinet art is incomplete but the lighted panel clearly displays the name of this newborn: *Asteroids*. The proud father stands back and waits.

"A guy walks over and puts in his quarter," smiles Ed, "and he died three times in about 20 seconds. Then he reached out and put another quarter in. I thought, okay, if he's dying three times and still putting in another quarter, he must think it's his fault, not that the game has got it in for him. He died again, almost instantly. He put in quarter after quarter after quarter…"

He was to be the first of many. *Asteroids* epitomised the 'easy to learn, difficult to master' philosophy of game design and Atari managed to shift a staggering 75,000 units, making it its biggest selling coin-op. "I heard people saying we only made about half of the machines out there," adds Ed. "I've certainly seen counterfeit boards…"

Getting started…

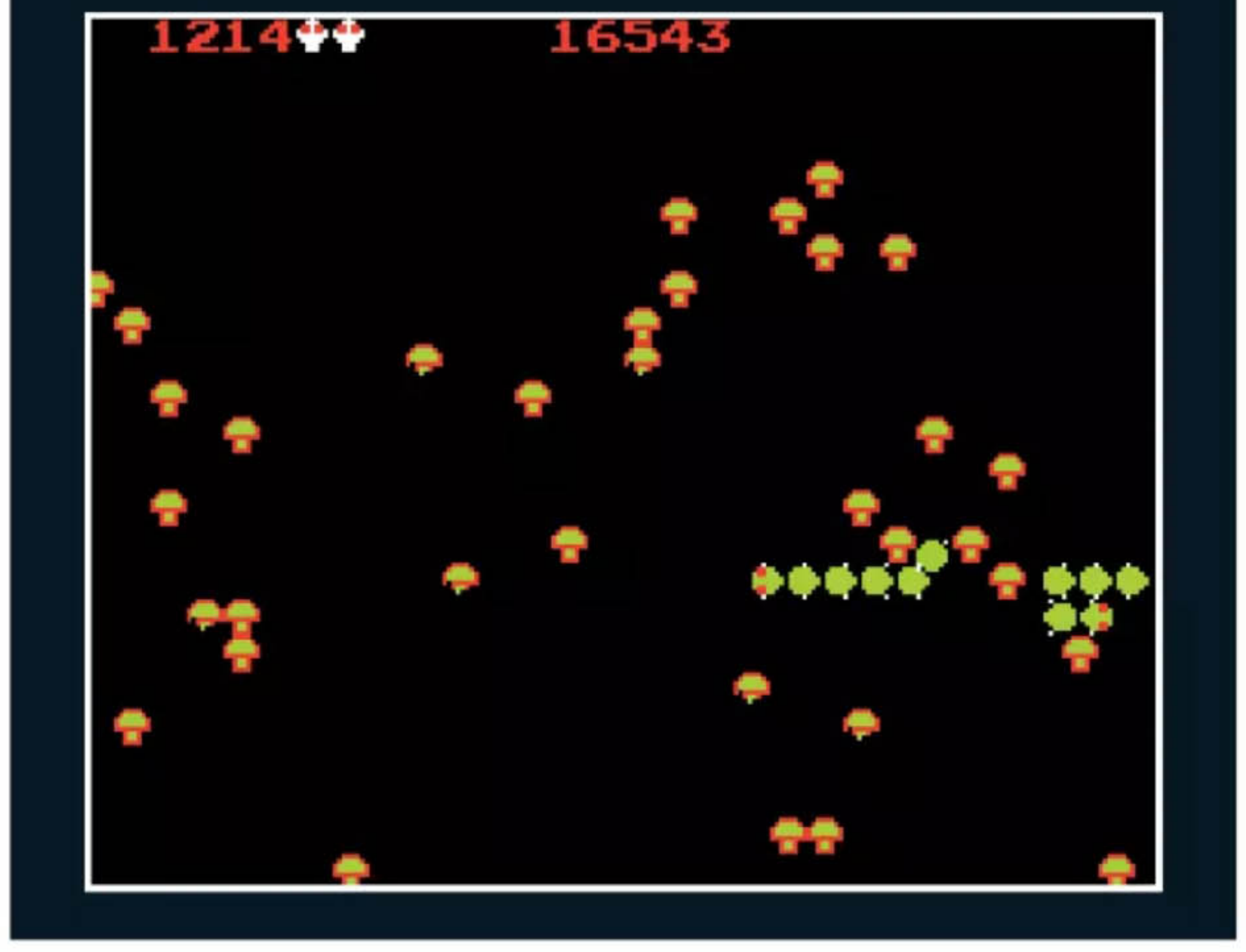
Success breeds imitation, though the journey to that first field test in Sacramento actually began almost a decade before, thanks to a little inspiration from the daddy of all space shooters. "I'd played four-player *Space War* back in the early-Seventies on a PDP machine in the Stanford Research Lab," recalls Ed. "Down on campus in the Stanford Forum, they had two machines linked up and you could play for a quarter. Was I any good? Oh no! The other guys would cream my ass over and over again."

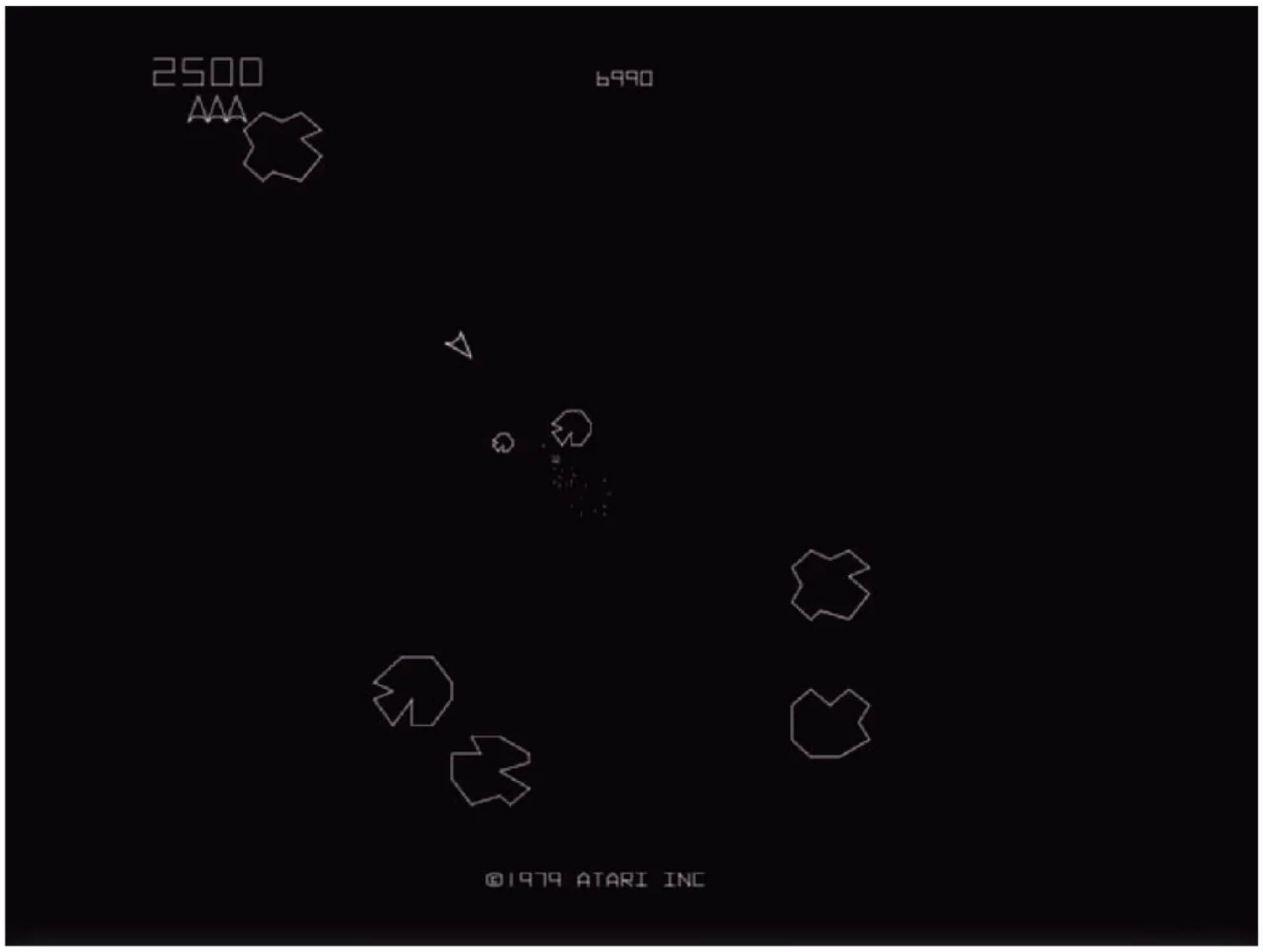
DEVELOPER HIGHLIGHTS

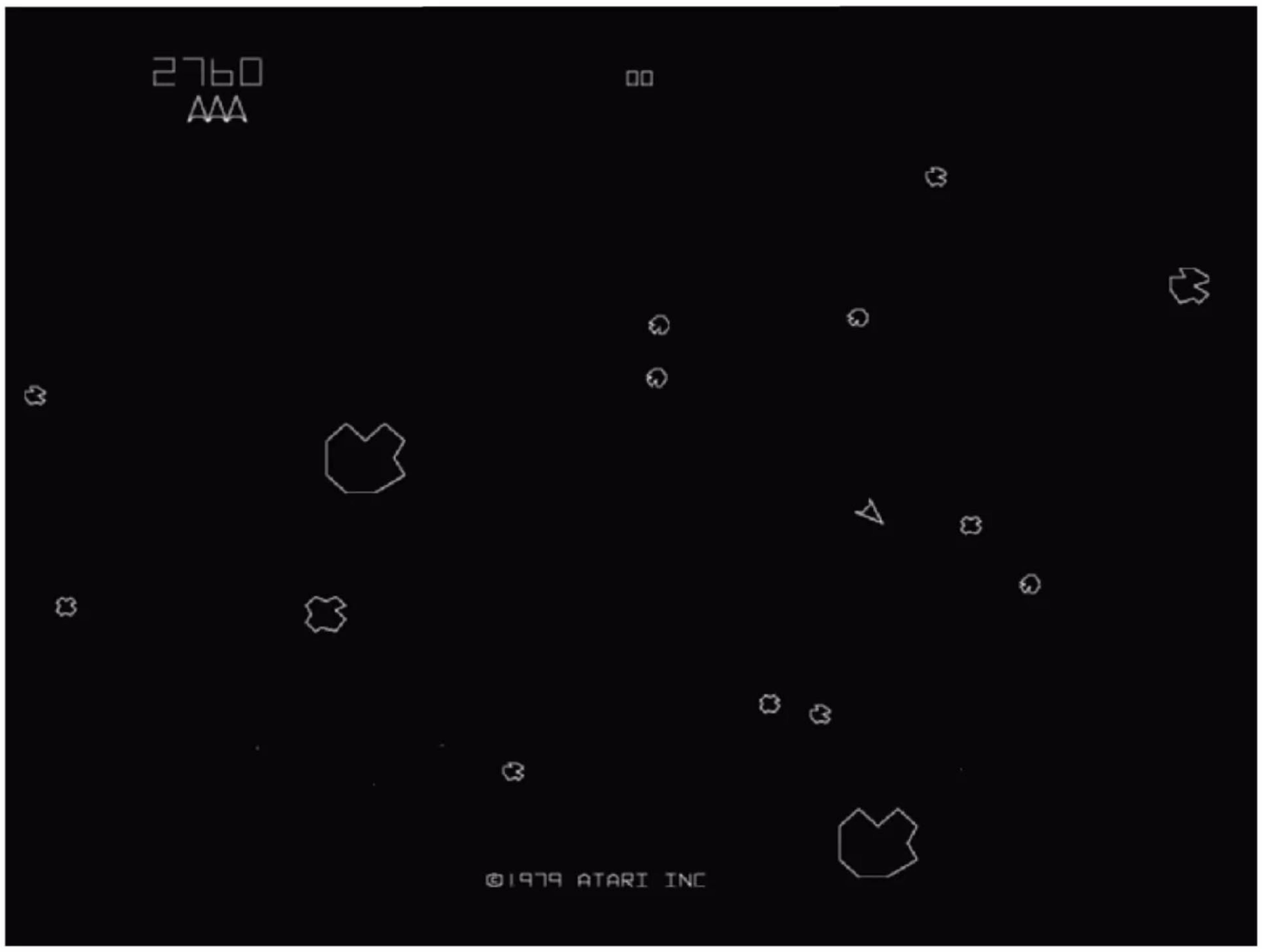
Breakout
System: Arcade
Year: 1978

Lunar lander
System: Arcade
Year: 1979

Centipede (PICTURED)
System: Arcade
Year: 1980

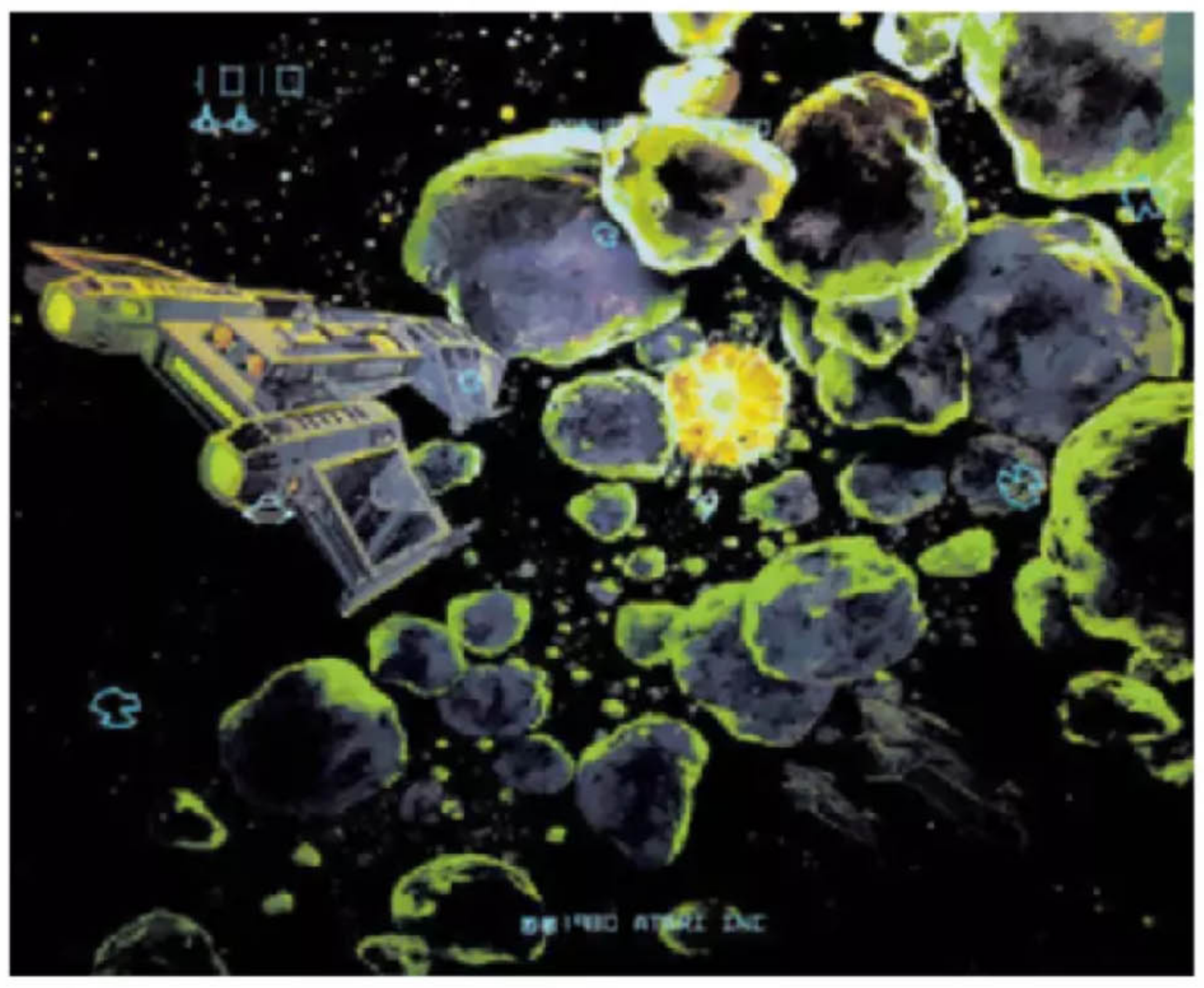






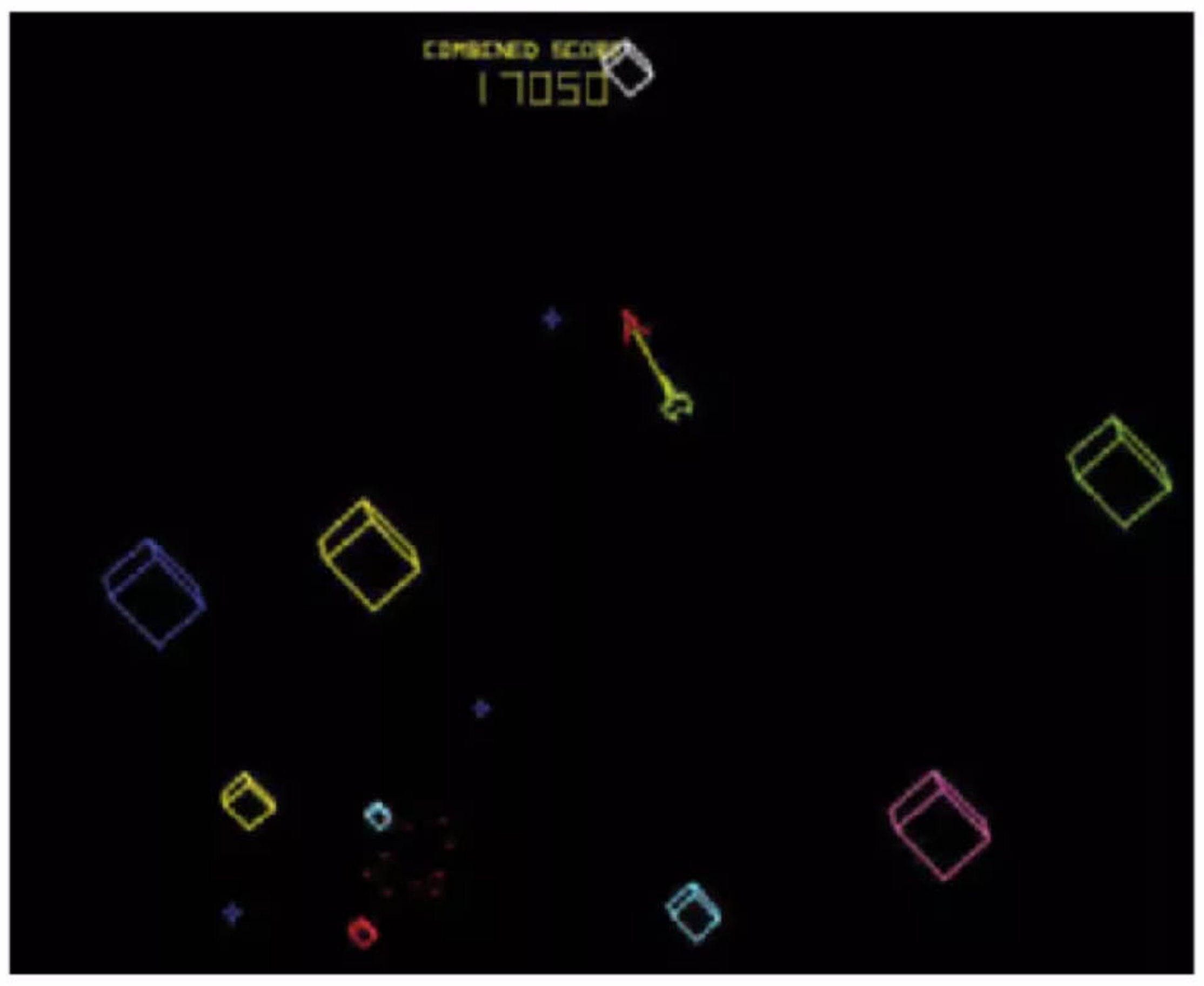
> "I SUGGESTED THE ASTEROIDS IDEA MORE AS A CREATIVE EXERCISE THAN A FULL-BLOWN PROJECT"
>
> LYLE RAINS ON WHY EXERCISE IS GOOD FOR YOU

Rock on – asteroids sequels



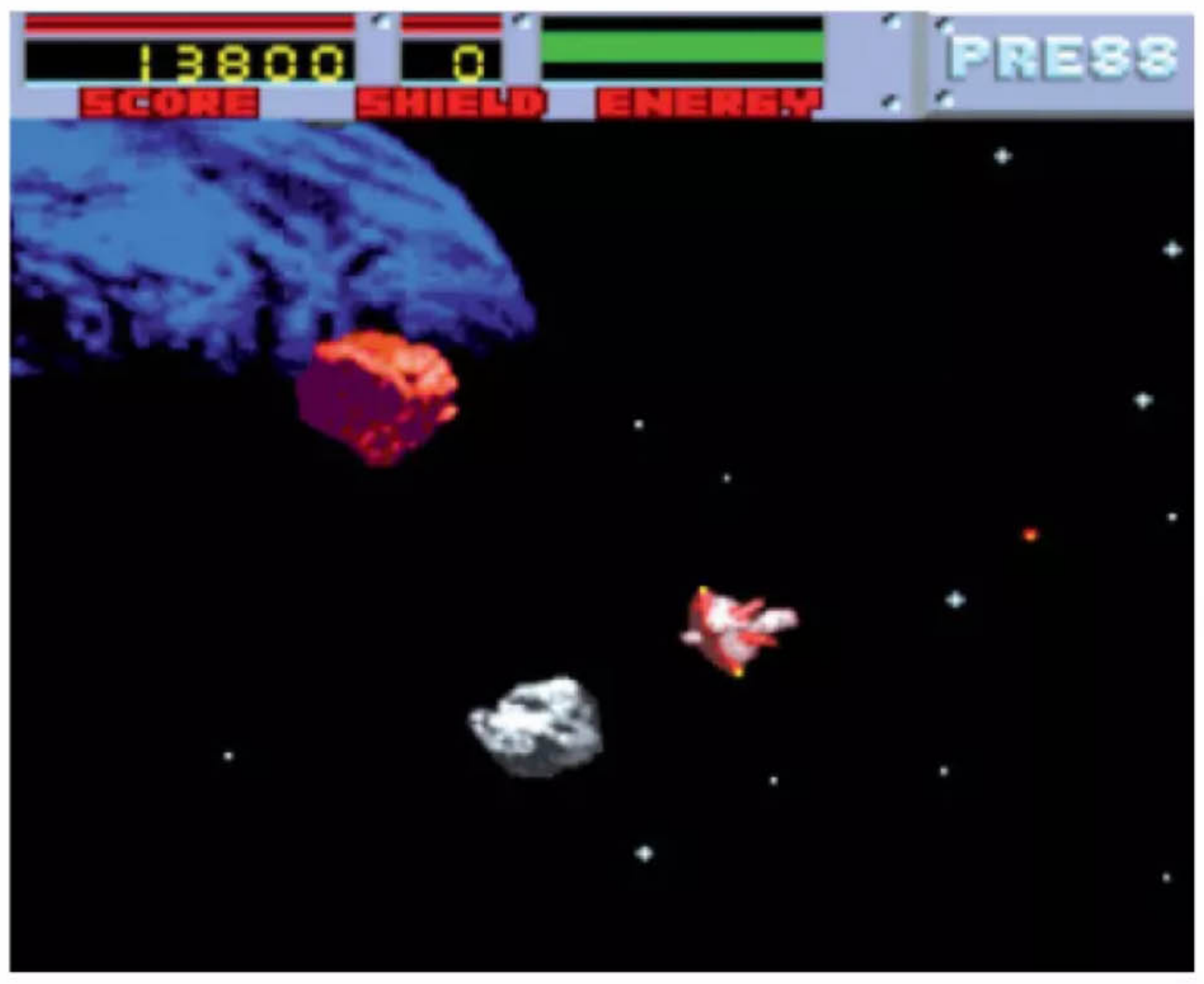
ASTEROIDS DELUXE 1980

Dave Shepherd took Ed's code and added a shield and new enemies. Ed: "I was busy being a supervisor and had no involvement. I find it a little too hard." We agree. The killer satellite is just viscious.



SPACE DUEL 1982

A colourful reworking by Owen Rubin, with inventive co-op play and wonderful spinning shapes. Ed: "My initial reaction was that it was very abstract, perhaps too abstract for the casual player."



BLASTEROIDS 1987

Ed Rotberg added power-ups, ship morphing, branching levels, bosses and the ability to dock your ships in multiplayer for added firepower. Best played on an original cab with spinner controllers.

Though no maestro on this makeshift multiplayer cab, Ed knew what made a good game. His work on *Super Breakout*, released in 1978, proved he knew how to revisit an idea and add his own unique signature without losing the original appeal. But when his boss, Lyle Rains, called him into his office the following April, it was to discuss a game's failure to launch.

"Lyle was talking about an older game I remember seeing once and playing but it was just not fun," recalls Ed. "You were trying to shoot the other player but this asteroid was in the way. Players tried to shoot it – I know I did – even though it couldn't be destroyed. He said everyone just seems to shoot the rock, so let's create a game that lets you blow it up".

> "SOMEONE MADE IT SO YOU COULD BLOW UP THE OTHER GUY'S PLANETS. SUDDENLY IT WAS FUN"
>
> HOWARD DELMAN

"I don't really remember what that old game was," explains Lyle of that pivotal first meeting. "It may have been something I had seen in the labs and subconsciously picked up on the asteroid theme. I think of *Computer Space* as being more of the inspiration for the two-dimensional approach. You see, the biggest hit videogame at that time, perhaps of all time, was Taito's *Space Invaders*, which was predominately one-dimensional player control – left and right – with all the threats approaching from above. It was basically *Breakout* with moving bricks and a gun, instead of a ball and paddle. I was seeking a more satisfying two-dimensional game with a similar addictive gameplay theme of 'completion': eliminate all threats. I believe I described the concept to Ed in a few sentences: little flying ship as in *Computer Space*; big rocks becoming little rocks; fly and shoot till they all go away. There was no great detail."

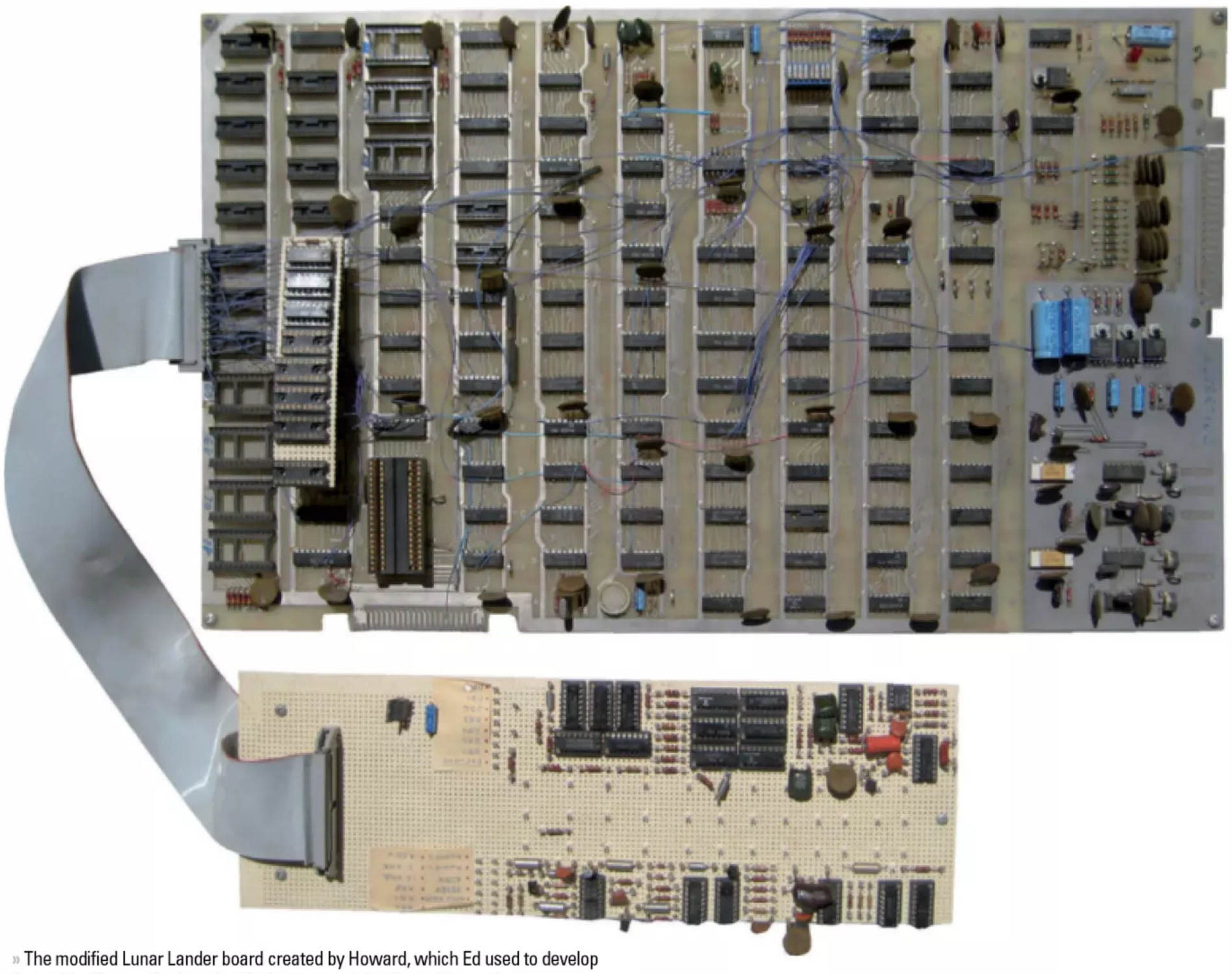
Though both men quickly agreed on the basics of the gameplay and indeed the name *Asteroids*, which emerged at this concept stage, they initially disagreed on the format of the project. "Lyle wanted to do it on raster and I said no, no, let's do it on vector," says Ed. 'I'd had some experience of working with vector technology. The higher resolution meant you had more control of where you were aiming, not just this blob."

Lyle chuckles: "Ed wanted to fool around with the new vector, or XY hardware before starting his next project. I suggested the game idea more as a creative exercise than a full-blown project. Obviously it took on a life of its own."

Enter Howard Delman

And the giver of life was hardware engineer Howard Delman. Howard had worked on many of Atari's post-*Pong* successes, including *Super Bug* and the first simultaneous co-operative arcade game, *Fire Truck*. Game development in those pioneering days of the mid-Seventies was not clearly divided into software and hardware roles, meaning that Howard had a handle on both of these emerging fields. Having joined Atari in 1976, he also remembers a project that had been floating around for quite a while…

"There was this old game that had been worked on for a long time because no one could quite make it fun," he laughs. "It was originally called *Cosmos* and then became known as *Planet Grab*, a two-player game



» The modified Lunar Lander board created by Howard, which Ed used to develop Asteroids. The smaller board at the bottom contains those 13 sounds.

where you were trying to claim planets in space. The more you claimed, the more you scored, and you could steal planets from your opponent, too. As the game was being tweaked and people were trying to make it fun – because it really wasn't fun – someone made it so you could blow up the other guy's planets. And suddenly it was fun. Forget trying to steal his planets, just blow them up. You can see where this was heading… When they saw the vector hardware we were working on, they said 'Oh my God, that would be great for *Asteroids*'. Ed must have been the third programmer on that project. He came to me, I hooked him up with a board and he got to work."

And Howard still has that very board in his workshop, a mass of chips and wires and hand-scrawled notes. He's clearly proud recalling the story of how he came to be in charge of handling Atari's first steps into the shining light of vector game development.

"In early-1978, vector games began to emerge, but not from Atari," he begins. "Atari had a research-and-development group in Grass Valley. They came up with an XY display system, and came down to show it to us. It was really cool and we wanted it. They left it with us but it wasn't done, nor was it a platform to do games on. It was the basic hardware concept and I was given the task of turning that into something we could use for a game. It was like I took this rough bit of clay and made it into something real."

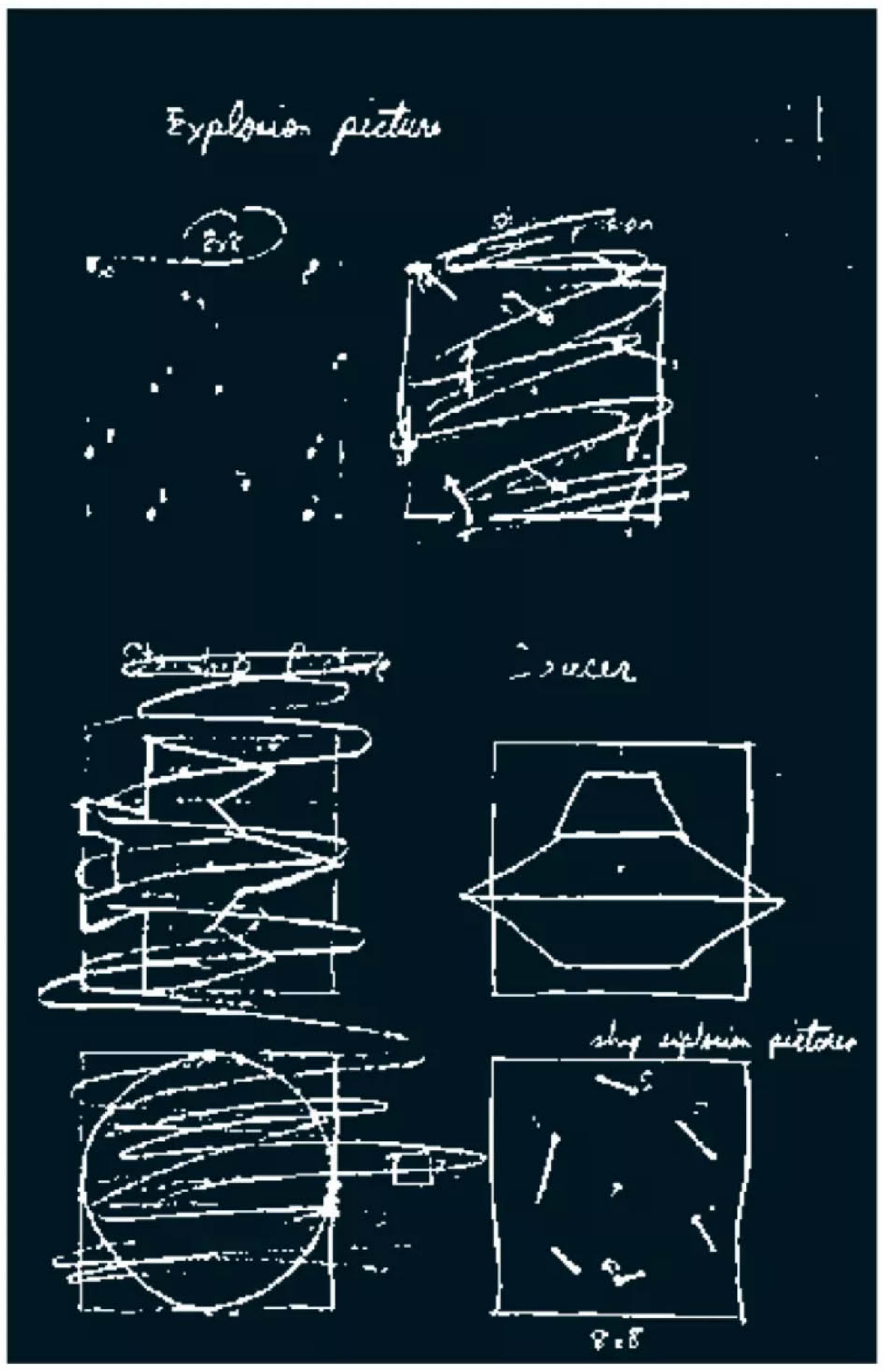
Howard was tasked with not only shaping this fascinating technology into something useable, he also had to decide on a game idea to showcase this great leap forward. He settled on *Lunar Lander*, which became Atari's first vector game, released exactly a decade after the historic moon landings. He was joined on the project by Rich Moore and also one Ed Logg, who worked on the distinctive alpha-numeric character set used for the on-screen text and scoring. Thus when Ed received his customised Lunar Lander board, bolstered with extra RAM and some bespoke 'jumps and cuts' from Howard, he had some knowledge of the new hardware. "Man, that thing was tiny," chuckles Ed. "This little four-by-four inch board with five buttons and wires coming off it, linked up to a screen. I started by just getting the ship [to appear] on screen. I wanted to see it flying around…"

Friction or no friction?

Ed had toyed with having no friction to decrease the forward movement of your ship and with no inertia at all (which made the game too easy) before arriving at his happy medium. It was typical of Ed's approach to the game's development: experimenting with different settings, many inspired by those early battles on Space War, to see which delivered the best experience and always on the look out for fortuitous side effects.

> "I STARTED BY JUST GETTING THE SHIP [TO APPEAR] ON SCREEN. I WANTED TO SEE IT FLYING AROUND…"
>
> ED LOGG

"It was all ad hoc at this point," explains Ed when we asked him about those early days on the game. "There was no design document. How did I get those cool vapour trails? That was just a property of those old monitors. They have phosphor and phosphor glows. You put that much electrical excitement into the phosphor, it takes a while for it to cool down and not glow, so it seems to leave this trace behind it."



» Designing the large saucer wasn't proving straightforward…

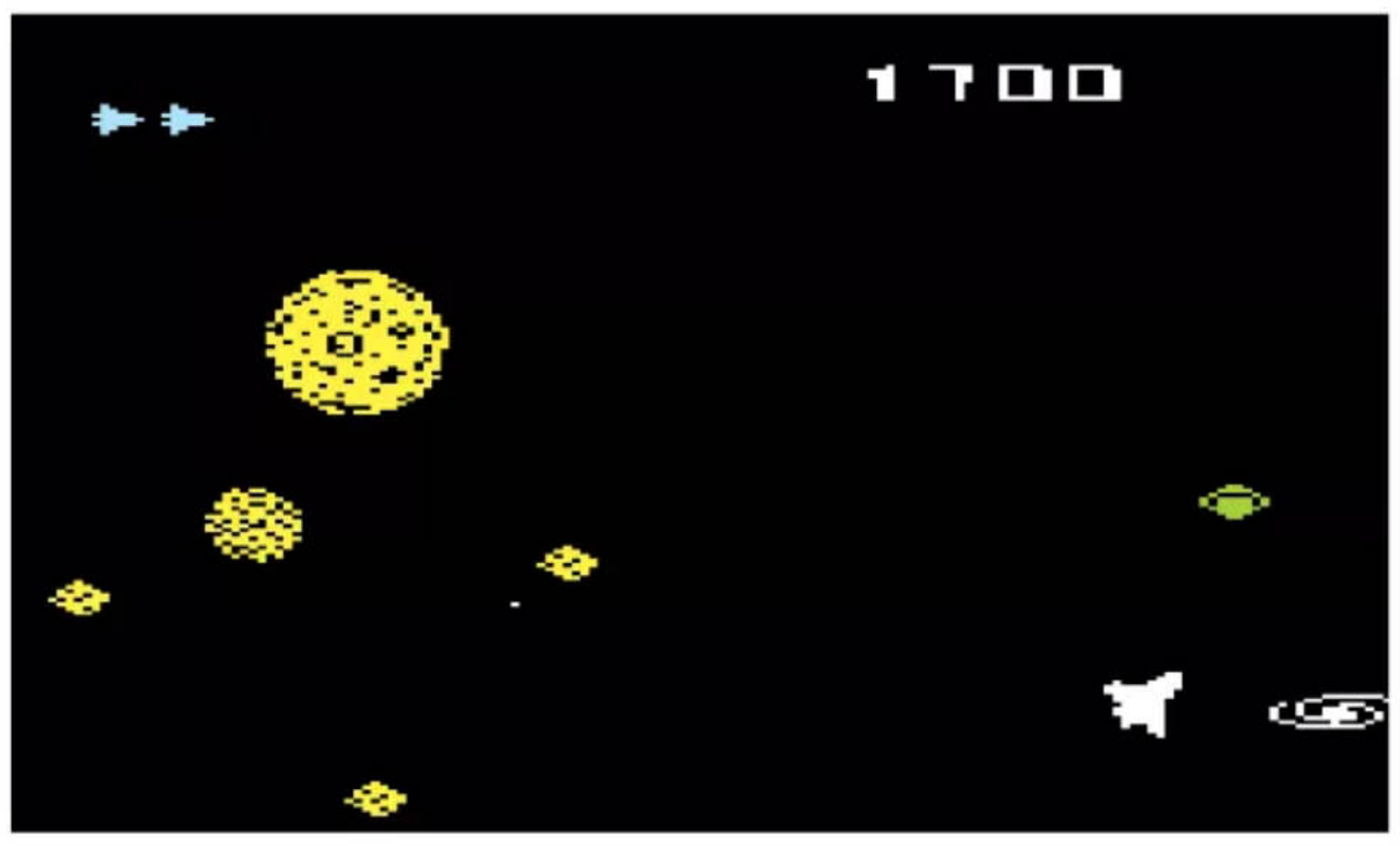
With your ship in motion, Ed sketched out different asteroid shapes and had them drift across the screen in increasing numbers. As you blasted them into smaller pieces, strategies began to emerge. Should you concentrate on the smaller rocks or take out the largest first? Should you stay put in the centre of the field or weave through the debris? The former felt like the safest option.

"I always wanted two saucers," he recalls. "A big one that fired randomly like cannon fodder to get you used to the concept that when you got down to fewer rocks, a ship was going to come out. The little saucer was about making you move. Run away, you're going to die if you stick around!"

Players started to develop a love-hate relationship with that little blighter. They loved the 1,000-point reward for shooting it, but cursed its accuracy and increasing speed. Ed also employed a timer that steadily decreased, meaning respite between saucer attacks became shorter. "I wanted to discourage you from not shooting stuff. Get rid of those small rocks so I can send a new lot of bigger rocks out there, because more stuff on screen means more chance of an unfortunate collision."

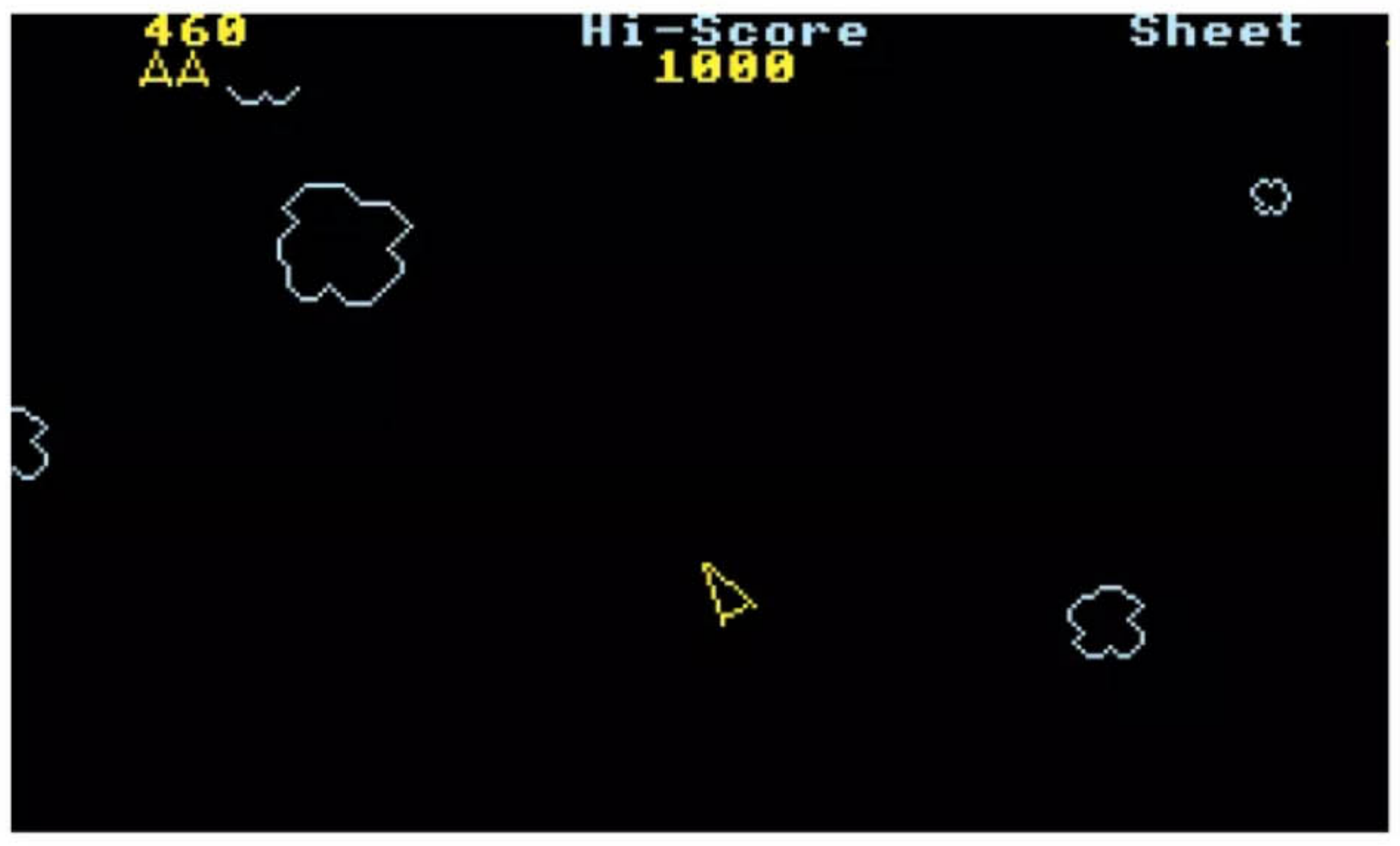
Of course, if you were really in a tight spot, you could hit hyperspace and take your chances. On re-entering the playfield, there was a random chance of your ship exploding, its three constituent parts torn asunder and gently fading in one of gaming's most lonesome deaths. "You know, I should have put some algorithm in so that

Send in the clones



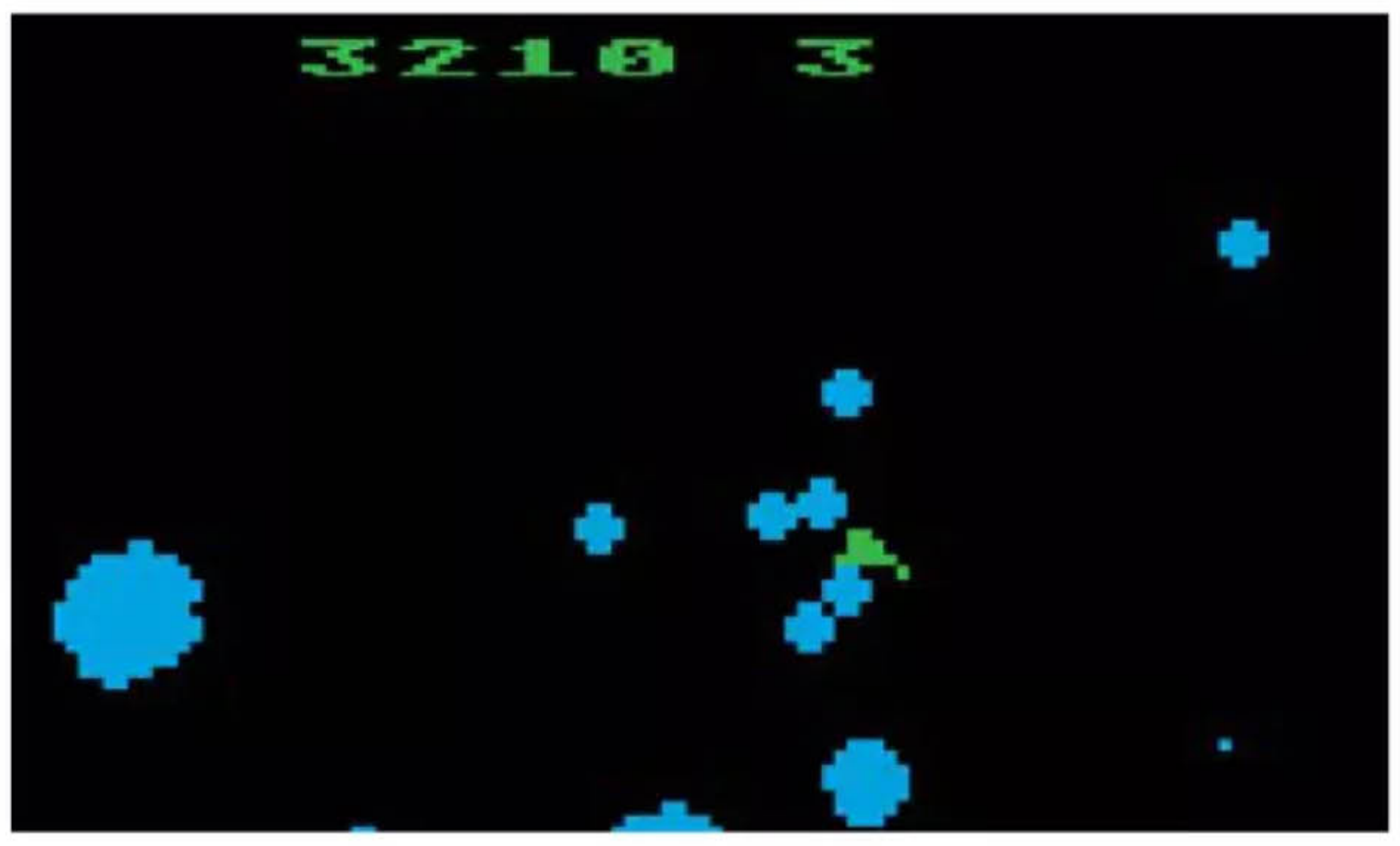
MOONS OF JUPITER (VIC 20)

An impressive effort for the expanded Vic and much better than Simon Munnery's version for Bug Byte, famously described as "a pile of wank" by Jeff Minter.



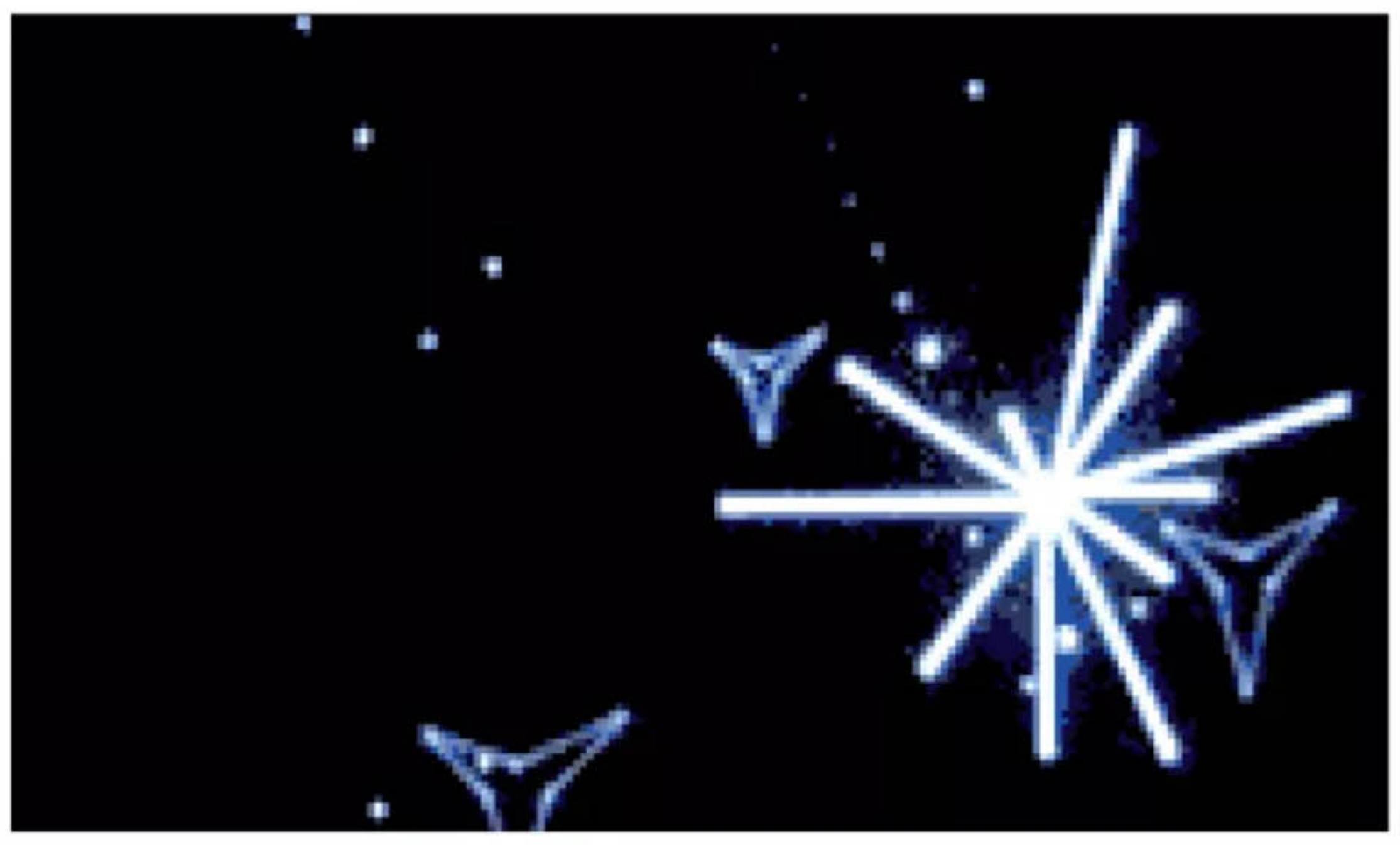
METEORS (BBC MICRO)

Acornsoft had a knack of producing superior arcade clones and this had schoolboys praying for wet lunch breaks so they could play it on the school's computers.



ASTEROIDS (ATARI 5200)

The VCS version was passable given the limited hardware, nut this upped the ante with a smoother, more authentic experience.



MINESTORM (VECTREX)

Okay, we're pushing it here as this doesn't even feature any rock blasting, but it's clearly inspired by *Asteroids*, has beautiful vector graphics and is utterly ace.

if there were lots of rocks on screen you didn't have much chance of blowing up, but with only a few it was a much higher chance," concedes Ed. "And I still have regrets about the placement of the hyperspace button. It should have been nearer my right thumb, so I didn't have to take my hand off thrust to hit it. You know, with hindsight I should have put a shield in instead. If you got hit it was decreased so you had a few chances. That would have given you some more strategy…"

It's the only time Ed questions his design choices, but then he was getting positive daily feedback from his peers. The Atari labs were open-plan affairs, long halls with room for two or three games in development at any one time. Half a dozen staff would be based in each room, and engineers would wander between labs, passing comment and stopping to play as they went.

"Some engineers walking by would see a couple of asteroids floating across my screen and start humming the tune to Lawrence Welk's Tiny Bubbles just to tease me," chuckles Ed. "A lot of colleagues would come by and ask 'when are you leaving?' 'When can I play this game?' And you realise, okay, that's a good sign… Management would come in and check on progress. Lyle was certainly interested. He was, like, let's do a focus group, let's do a field test."

Yes, feedback from outside the company was overwhelmingly positive, too. Atari had organised two focus groups in June 1979. On the 14th, they gathered together seven older players, veterans of *Space War*, and then on the 20th they tested *Asteroids* on nine children aged between 15 and 17, all of them were *Space Invaders* fans. Ed and his fellow engineers observed proceedings through one-way glass and player comments were noted down meticulously. Ever the archivist, Ed has held on to these four pages of detailed feedback and it's fascinating to read how players first struggled to get to grips with mechanics like the thrust button, requesting a joystick instead, and how the younger group, accustomed to taking shelter behind a base in *Space Invaders*, noted that you don't get a break in this game.

Ed is more circumspect when it comes to the value of these written responses. "I just look at their play and see what's going on. I always believe that if they don't get wowed immediately, you have a problem."

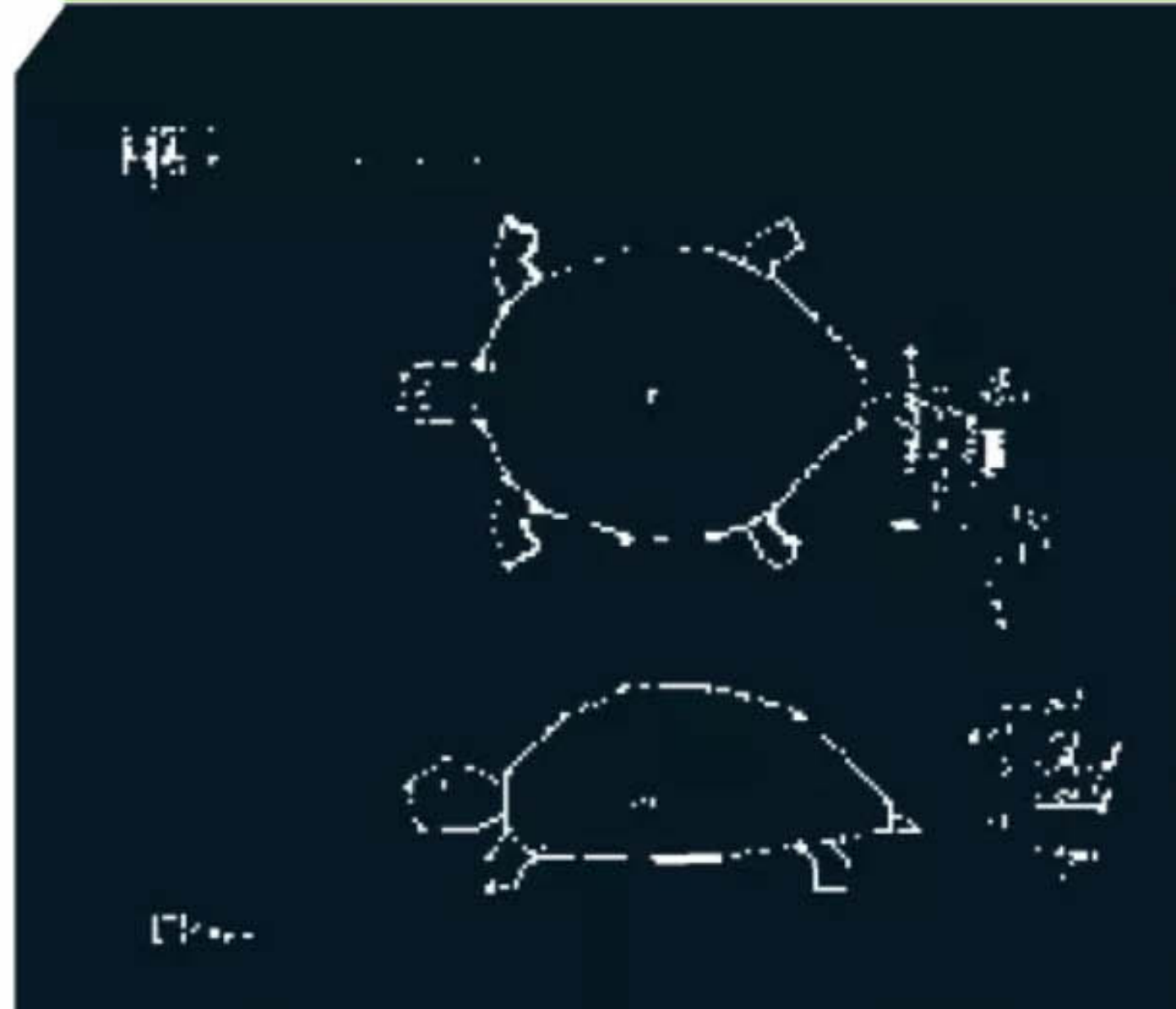
Players also commented on the way the sound effects built the tension, something Howard is especially proud of contributing. "That thump, thump, thump… I was really trying to do a heartbeat," he explains. "I sensed as the game sped up and you became more tense, your own heartbeat would speed up and I really wanted to keep them in sync. We didn't have sound chips back then so I created a hardware circuit for each of the 13 sounds by hand and wired them onto Ed's board myself."

Success story

Such was the intimate nature of creating videogames in those frontier days, and *Asteroids* stands as one of the period's crowning achievements. Released in November 1979, it went on selling for years, earning Atari an estimated $150 million in sales and a further $500 million in revenue.

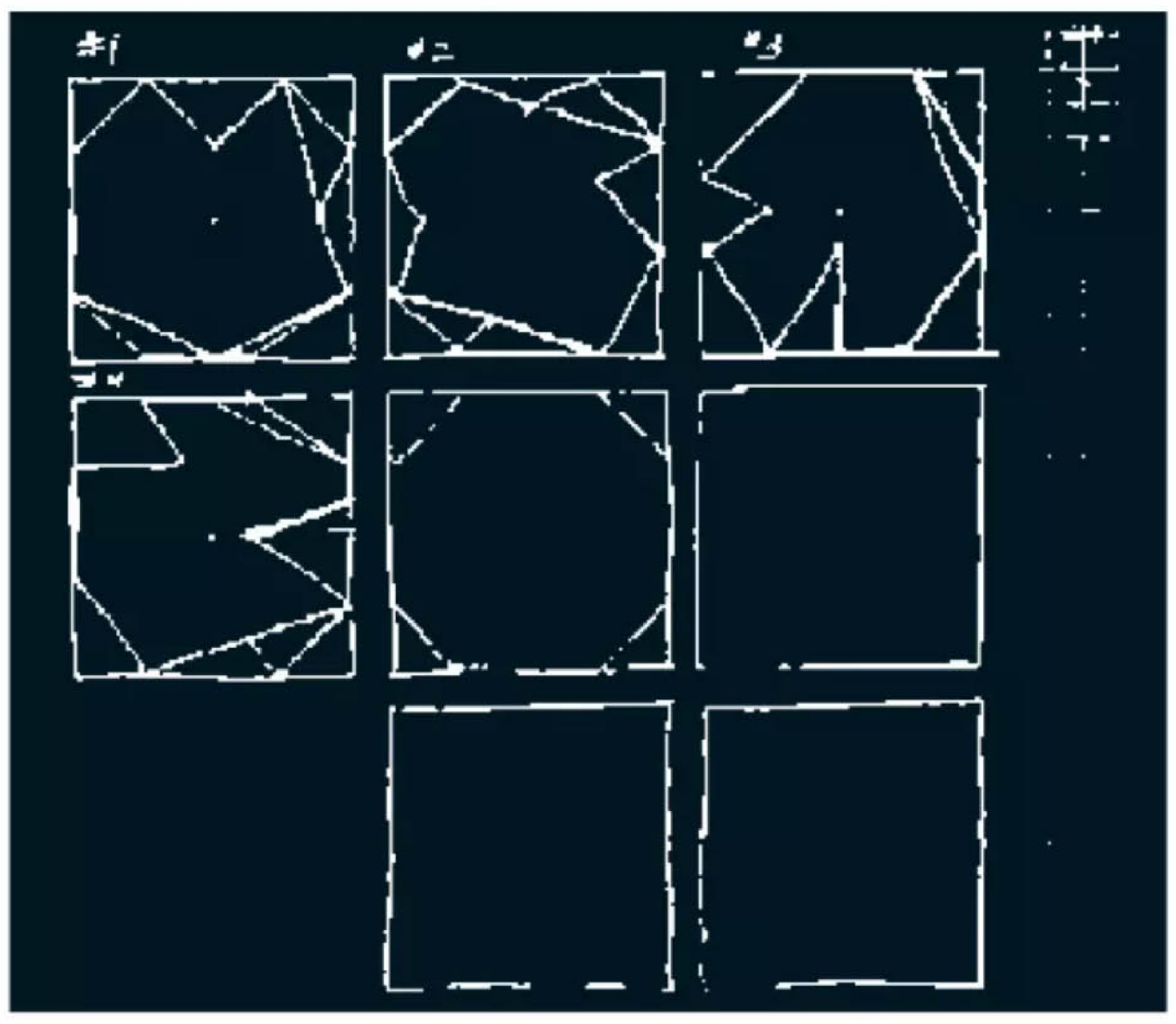
While nothing can truly detract from the game's enormous success, issues did arise post-release. Some were clearly technical: accumulate too many extra ships and the game slows to a crawl, and on some machines,

TURTLE POWER



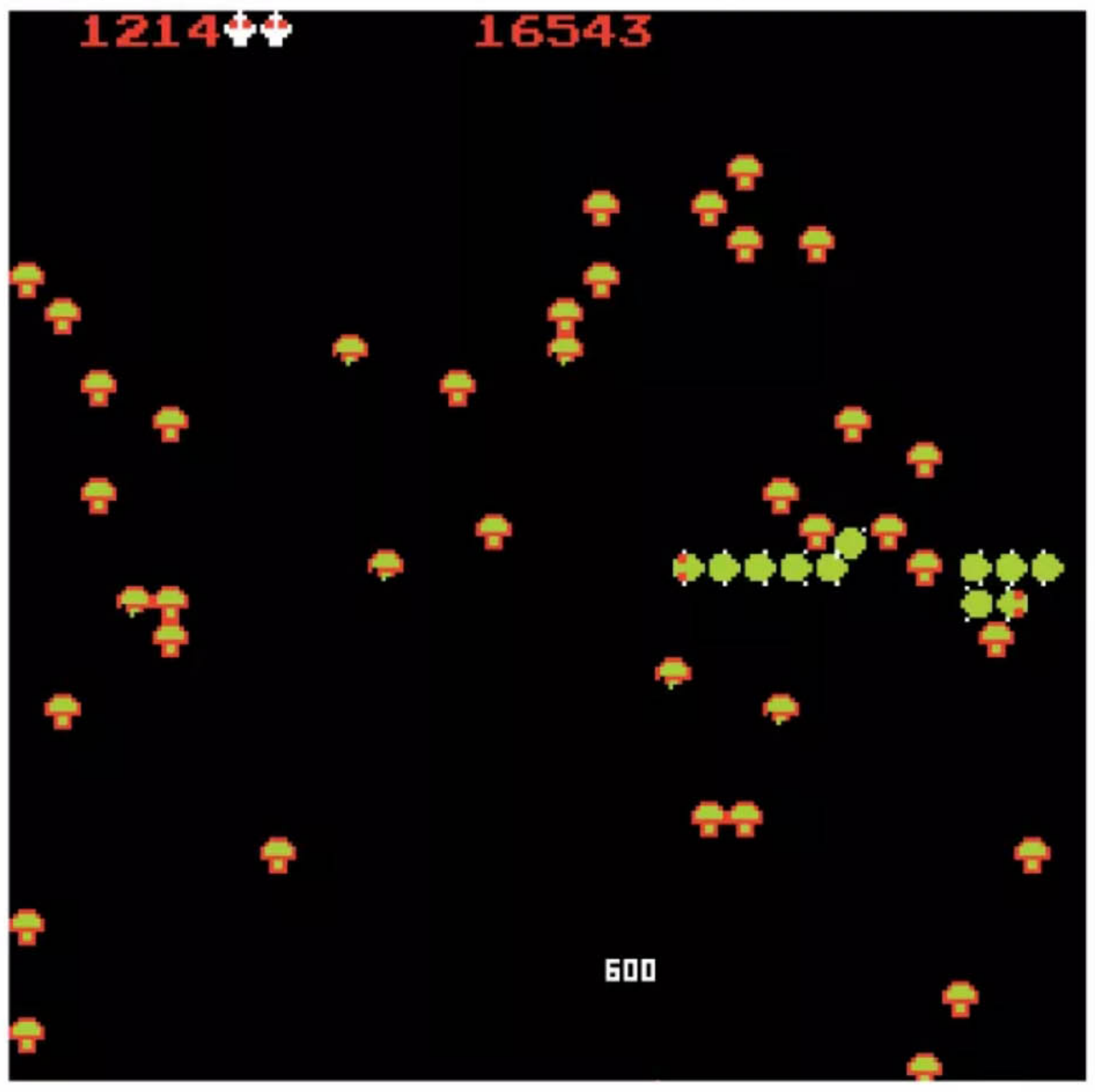
In light of its huge success in the arcades of the time, it seems surprising that Ed Logg never decided to revisited *Asteroids* nor did he produce another vector game while he worked at Atari, or any other videogame company. He cites the unreliability of the colour vector technology and his desire to work on something new, though he does reveal the little-known tale of Turtleroids. "Every year, Atari Coin-op had an off-site brainstorming session where we discussed new game ideas," he tells us.

"For many years the idea of Turtle Races was proposed. This was a game where you raced your turtle by continuously increasing your voice to get your turtle to move. Increasing too quickly caused the turtle to go into its shell for a while. The idea was always shot down. I'm not sure if we turned every game idea into turtle this or turtle that, but one year Frank Ballouz got up in front of everyone and said 'no more turtles!' Of course, we took it as a challenge. We had waiters bring drinks with wind-up turtles in and did everything we could think of in the way of turtles. Someone suggested we change the *Gold Asteroids* in the lobby of Coin-op Engineering in Sunnyvale to have a turtle instead of a saucer, so I changed the graphics and burned a special program to do this. Hence, Turtleroids."



» Ed's original sketches for the different rock shapes.

» *Centipede* was released in 1980 and was another hit for Ed.



» Scott Safran, whose *Asteroids* record stood for 27 years.

ASTEROIDS
43730

ASTEROID MEMORIES

"*Asteroids* was being developed in a lab near mine. I used to go in and play late at night, sometimes until I filled up the high score table with my initials. Ed Logg would come in next morning, reset it, work on the game and come in the next day to find 'ORR' was in every spot on the table again. So he put in a check for 'ORR' and all other combinations of my initials so they'd be replaced with his. I sent a note telling him there was a bug till he told me what he'd done…"

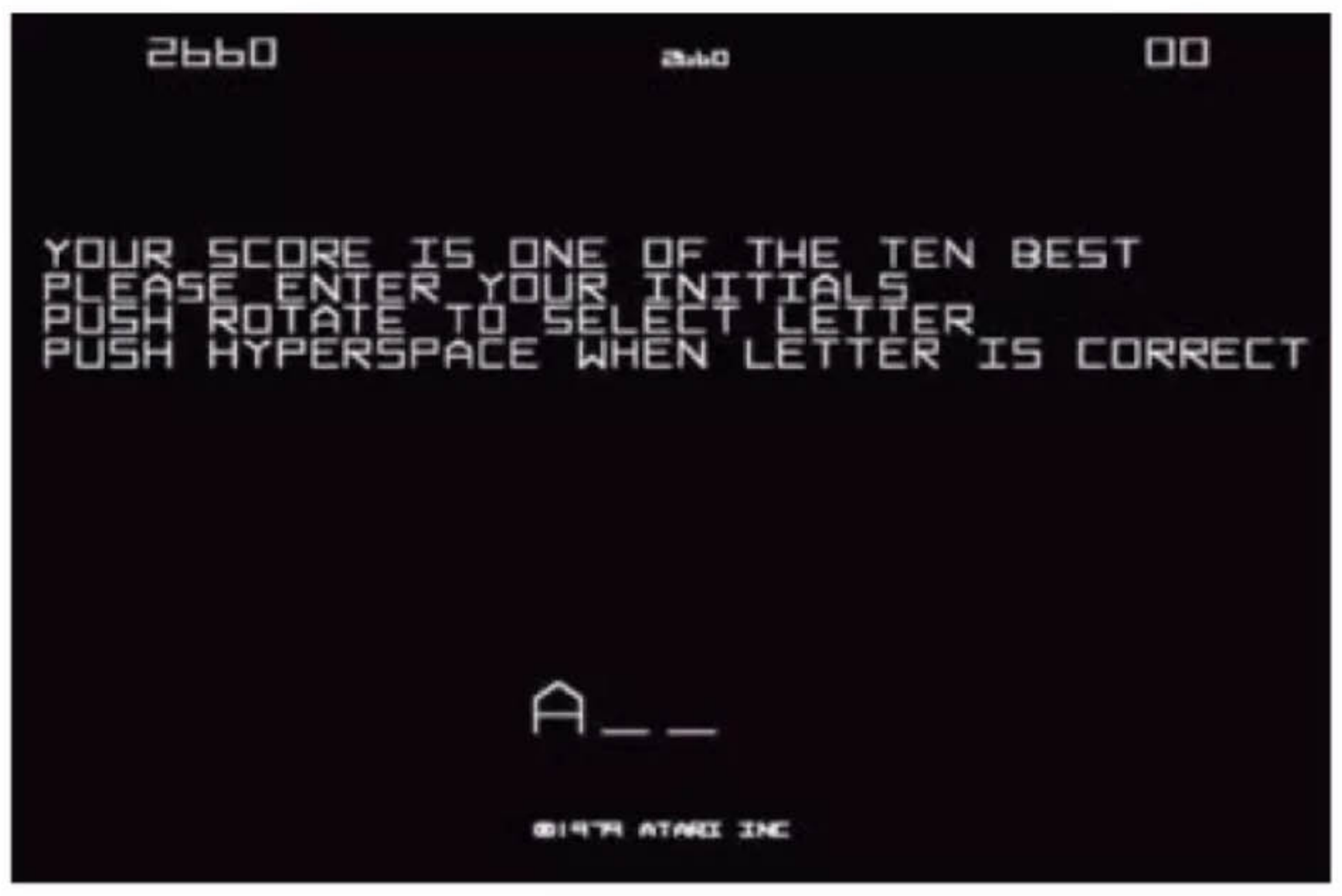
» Owen Rubin
Creator of *Space Duel* and *Major Havoc*

if you got down to just your ship and a single asteroid, the display would fade out. "That's the spot killer," declares Ed.

"If the game dies, the vector beam would just point at wherever you last pointed it and burn a hole in the screen," he continues. "We had a piece of circuitry so that if you don't move the vector enough it shuts it down. I wasn't given any technical numbers, so I put the score at the top and the Atari copyright at the bottom and thought that, along with the ship and at least one asteroid, that would be enough to disable the spot killer and the video display wouldn't be turned off… turns out it wasn't. As for the slowdown, if you have hundreds of ships, the game can't draw everything at 60Hz per frame. I wasn't clever enough to limit it to ten ships or something. Anyway, I thought Mr Bill would come out and blow you away…"

> "ASTEROIDS IS A MAN-AGAINST-MACHINE GAME. HOWEVER GOOD YOU GOT, IT WAS ALWAYS ONE STEP AHEAD"
>
> HOWARD DELMAN
> RAGES AGAINST THE MACHINE

The fact that Ed Logg received a cease and desist letter from their copyright holders, despite there being no reference to the Play-doh pair in the game itself, is an indication of how *Asteroids* had entered popular culture. And that was partly due to Mr Bill not doing his job…



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2660                2660                00

YOUR SCORE IS ONE OF THE TEN BEST
PLEASE ENTER YOUR INITIALS
PUSH ROTATE TO SELECT LETTER
PUSH HYPERSPACE WHEN LETTER IS CORRECT

              A__

          ©1979 ATARI INC
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» Ed took the idea for a high-score table from Exidy's *Star Fire*.

"Originally, the small saucer used to come out and shoot instantly," explains Ed. "If you were right next to him he'd nail you. People said it wasn't fair, so I said okay, I'll give you a second before he takes his shot so you can see where he's at. Unfortunately that opened the big fat window to lurking."

The lurking factor

Ah, the ancient art of lurking, where the proficient player leaves a solitary asteroid on screen and then hunts saucers for hours, sometimes days, accumulating mammoth scores. It reached its zenith in November 1982 when 15-year-old Scott Safran played a single game for an entire weekend setting the current world record of over 41 million and the widespread use of the technique led many arcade owners to complain about these marathon game sessions.

"What they didn't see was that some could play that long but a lot of other people would try," notes Ed. "That really contributed to both the game's popularity and its longevity. We actually made a new chip to prevent lurking, but a lot of operators found that with it their earnings went down and wanted it put back to the old way. Asteroids would have been successful anyway, but lurking became part of its lore…"

"Sure, there were those who could play forever, but the average player always felt that his failures were his own, that the game was fair, and he could do better next time," adds Lyle. "I think the 'secret' of *Asteroids*' phenomenal success was Ed's near-perfect tuning of the difficulty."

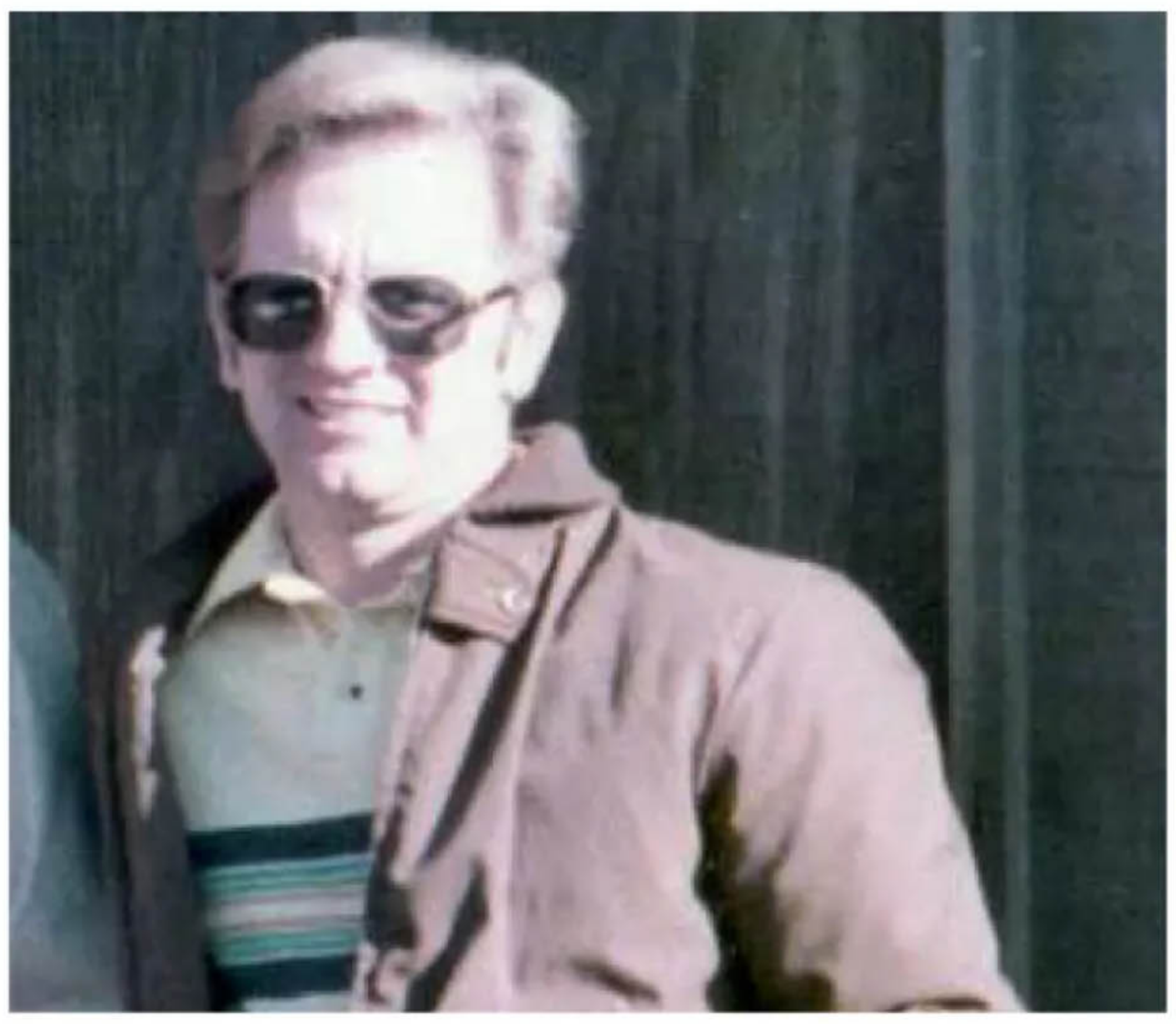
"It came out at a great time, too," says Howard. "Arcades were springing up everywhere. The industry was hot back then. And *Asteroids* is a classic man-against-machine game. It was simple to learn, obvious what you had to do and you could improve quickly, but however good you got, the game was always one step ahead. I used to get into fights with marketing guys who wanted games with more colour, more things on screen, things to be more lifelike. I'd say it was all about gameplay, how fun something is."

Ladies and gentlemen, we are still floating in space…

ASTEROID MEMORIES

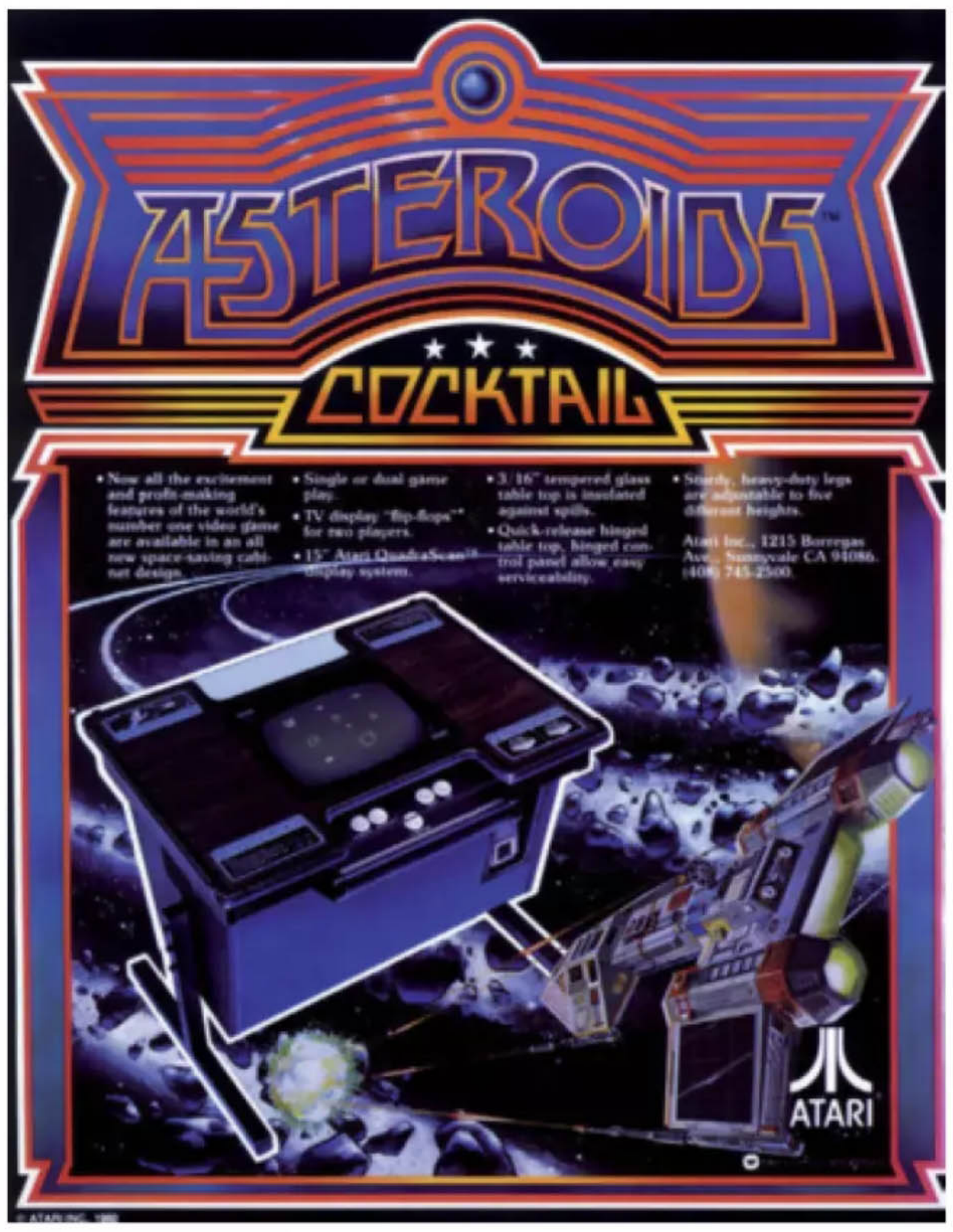
"*Asteroids* was my first experience of videogames. I did house sitting for some friends and they happened to have a machine. I'd play it when I was there and thought it was kinda fun and when they moved they gave it to me as a gift. Years later, I was introduced to Ed at a party by Ed Rotberg who said he'd like to introduce me to the best. No, I was not a groupie! I think Ed was supposed to sign my control panel. He still hasn't got round to it."

» Irene Logg Wife of Ed Logg



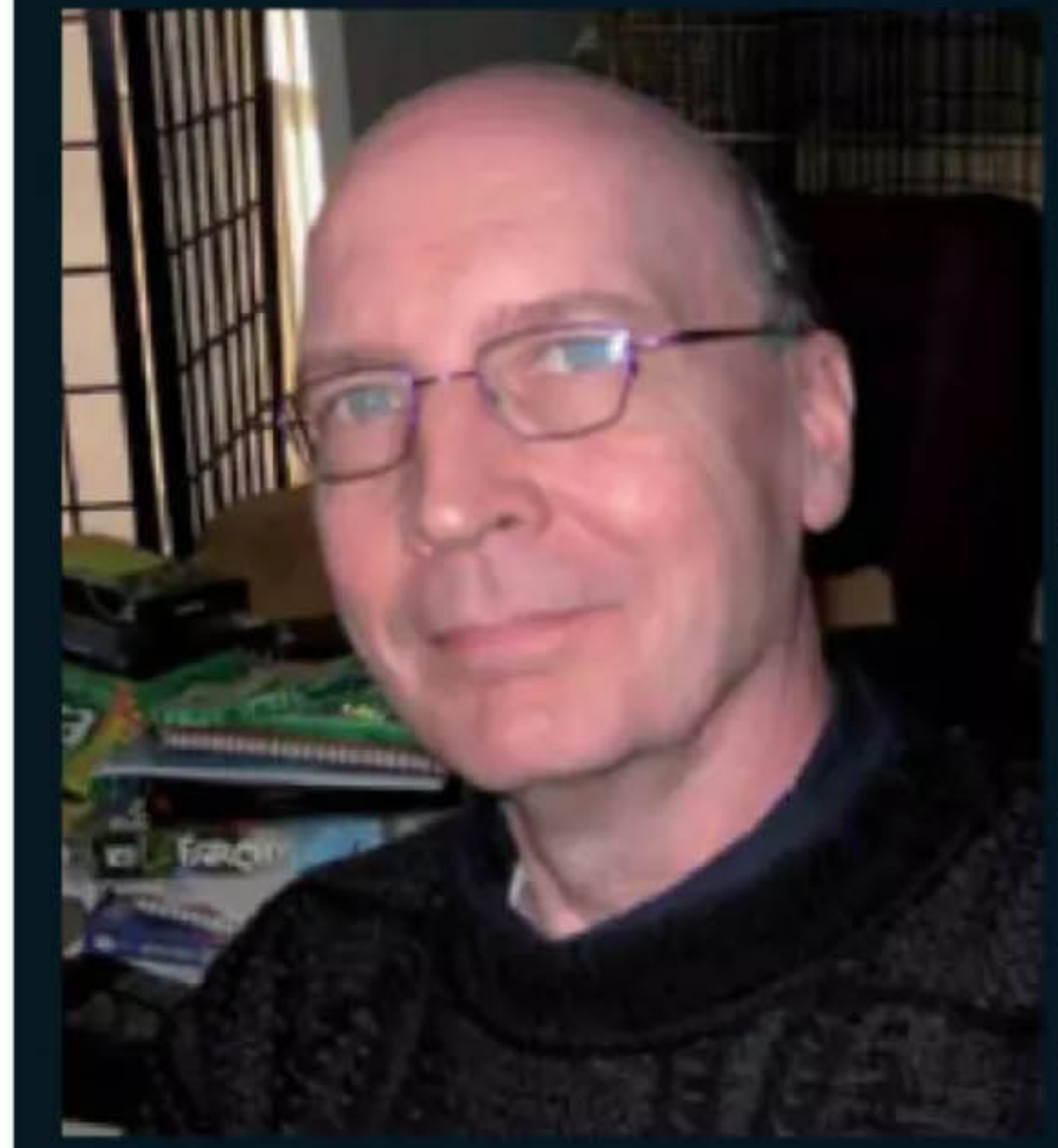
» Ed in 1983, after *Asteroids* and *Centipede* but before *Gauntlet*…

» An arcade flyer for the fancy cocktail cabinet.



ASTEROID MEMORIES

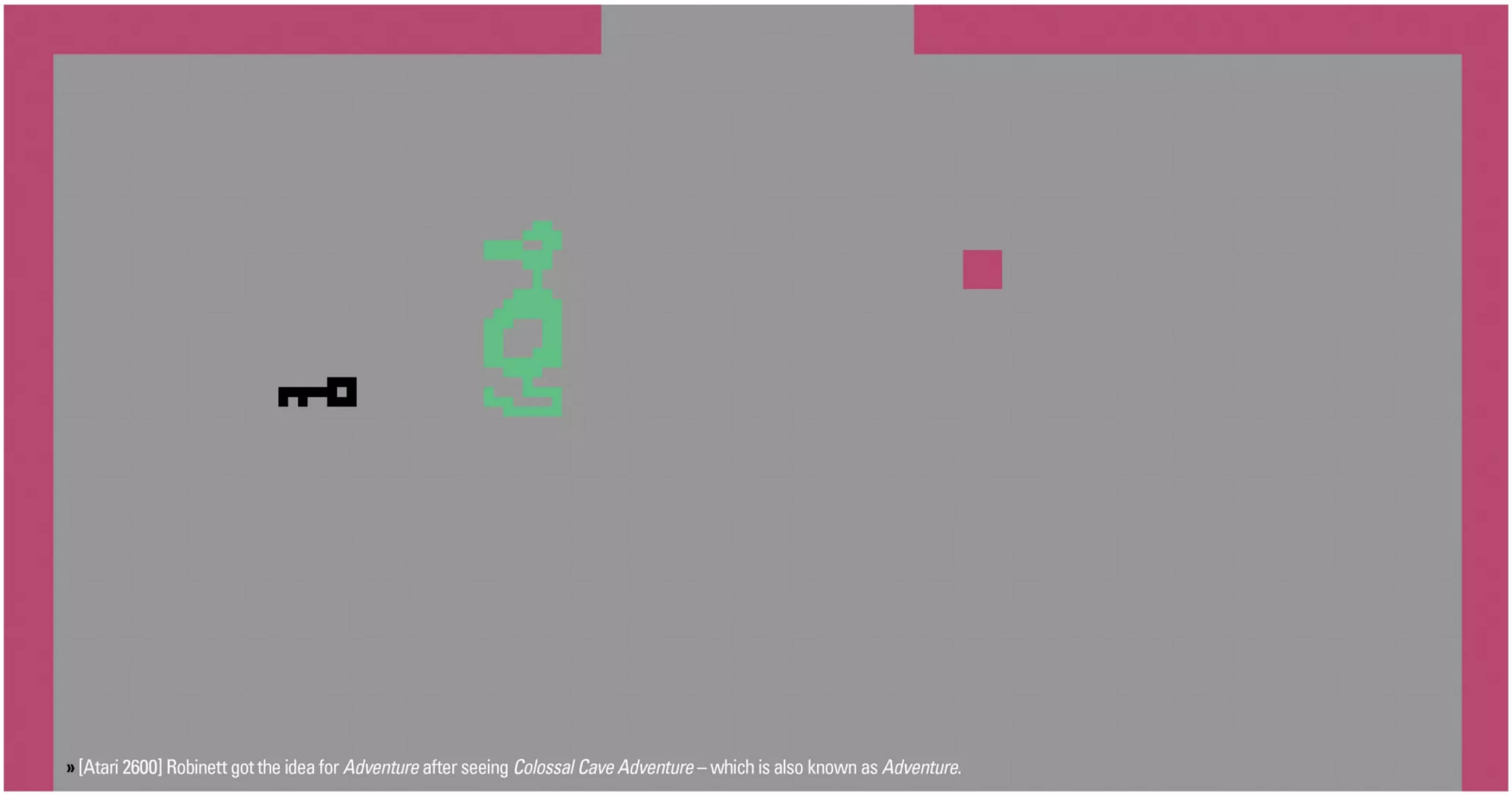
"When I saw *Asteroids* at an AMOA show in Chicago, I thought, 'why didn't I think of that?' Its strength was that it allowed you to work out your own ways to win the game. Every player was free to break rocks and shoot saucers any way they pleased. It was an inspiration to me and to decades of game designers. When I was briefly working for Gremlin/Sega, the team there created a variation on it called Space Meatball or F*** Your Buddy, depending on the prototype. My point is, flexibility is fun, and Asteroids introduced flexible gameplay."



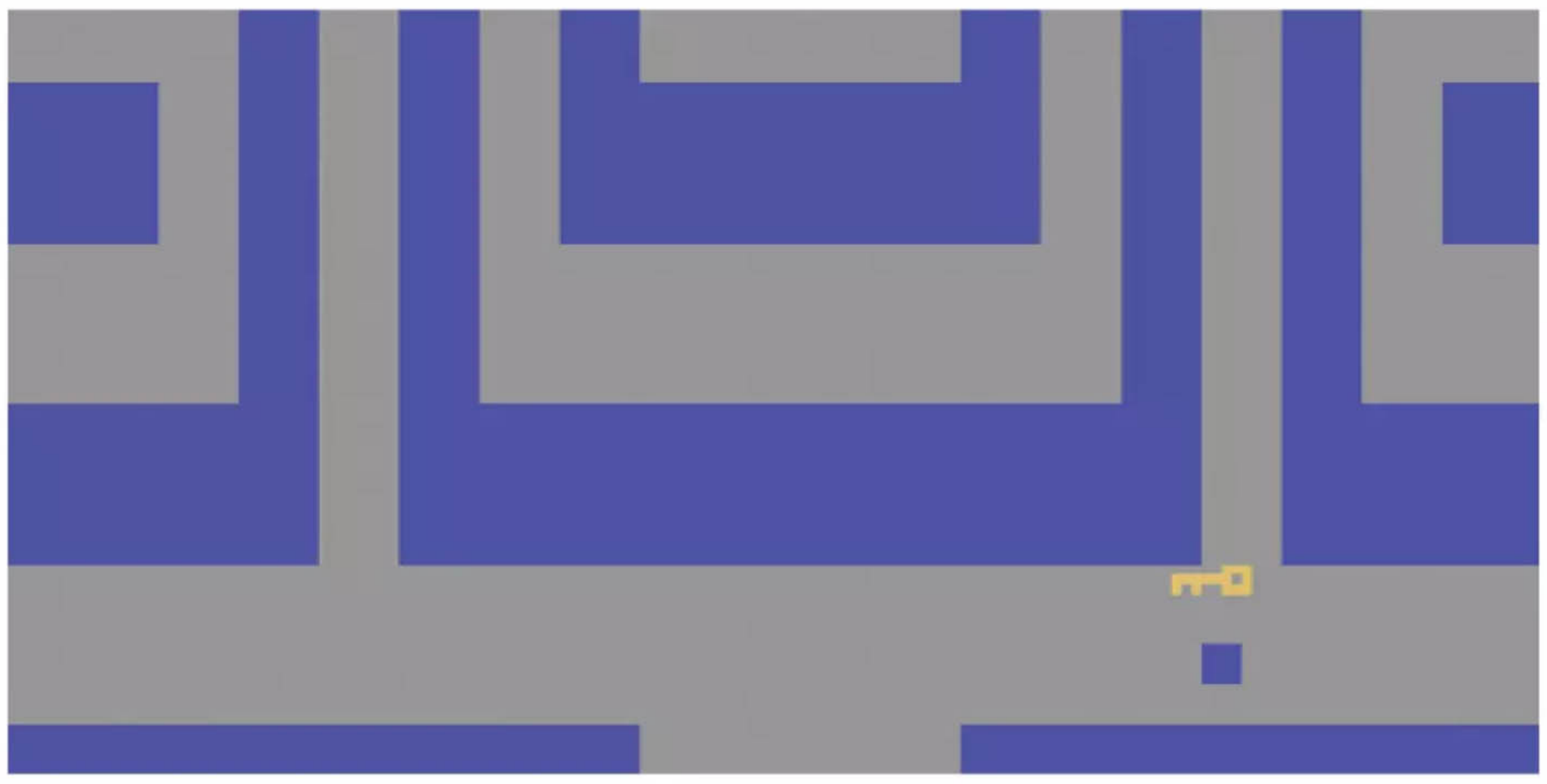
» Tim Skelly Vector Game Pioneer at Cinematronics

THE MAKING OF ADVENTURE

ONE OF THE MOST INFLUENTIAL ACTION ADVENTURE GAMES, ADVENTURE ACHIEVED THE EXTRAORDINARY. STUART HUNT SPEAKS TO ITS CREATOR WARREN ROBINETT ABOUT DUNGEONS, DUCKS AND THE FIRST GAMING EASTER EGG



» [Atari 2600] Robinett got the idea for *Adventure* after seeing *Colossal Cave Adventure* – which is also known as *Adventure*.

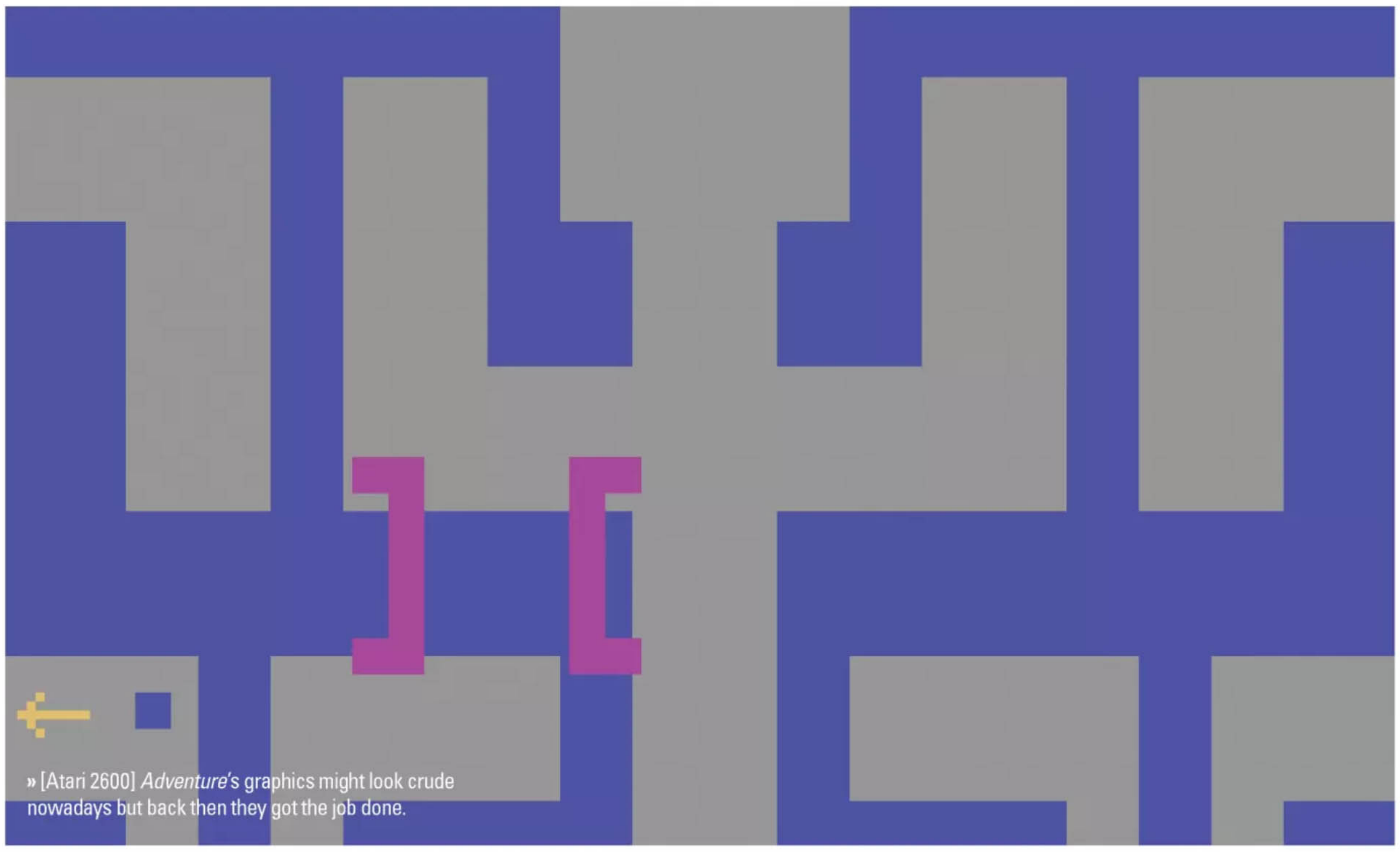


» [Atari 2600] They might resemble ducks, but the dragons were pretty scary back then, especially when you come up against one in a 'fog of war' room.

» [Atari 2600] A sneaky bat is the bane of *Adventure* players, forcing them on a wild bat chase.

IN THE KNOW

- **Publisher:** Atari
- **Developer:** In-house (Warren Robinett)
- **Platform:** Atari 2600
- **Year released:** 1979
- **Genre:** Adventure



» [Atari 2600] *Adventure's* graphics might look crude nowadays but back then they got the job done.

We would argue that the role-playing game has evolved more than any other genre. The earliest RPGs look barely recognisable against their modern day equivalents. The imaginations of today's RPG fans have far less work to do. Everything now looks crisper, and more realistic. Dragons look like dragons, unwashed villagers look like unwashed villagers and dungeons look like Hollywood film sets. Back in the Seventies though, role-playing games were created using broad strokes and by giving players enough of them to be able to formulate the finer details of their adventures in their own heads.

Before the release of Adventure in 1979 RPGs were mostly text-based, running on large mainframe computers and inspired by the pen and paper game Dungeons & Dragons, mimicking many of its ideas and gameplay mechanics. As time and technology moved on developers started coming up with their own ideas and player interaction with their virtual worlds became entirely visual. Typing and hoping was replaced by pressing and exploring.

Many writers cite that the graphical action-adventure game, a style of RPG typified by the likes of The Legend Of Zelda, Dragon Quest and Final Fantasy, can be traced back to Adventure. One of the 2600's most seminal games, its creator Warren Robinett had a short but impactful dalliance with mainstream gaming during his tenure at Atari: he took the decision to leave the company soon after the game's release, and in 1980 co-founded The Learning Company, one of the first ever software companies to set its sights on the lucrative education market.

Though Warren admits that his time working for Atari wasn't the most harmonious period in his career, he still remains immensely proud of what he achieved there with Adventure, a game which is as well remembered by gamers for the things that it introduced as much as the ambitious adventure it took them on. For Warren, it's an adventure that began in the early Seventies.

"I was interested in computer graphics when I was an undergraduate at Rice and a grad student at Berkeley. I got a masters degree in computer science at Berkeley in 1976." Warren tells us. "I had a pretty fun year in 1977 building log cabins, and bicycling across the country, but then I ran out of money and needed to go back to California and get a job. It was then I heard about Atari, and showed up there and filled out a job application. I wrote a little essay about the reasons why I would be perfect for them, and so they hired me."

» [Atari 2600] *Adventure* sold over one million copies, and was one of the 2600's earliest hits.

ADVENTURE
VIDEO COMPUTER SYSTEM™
GAME PROGRAM™
3 VIDEO GAMES
THREE SKILL LEVELS
ONE PLAYER
video computer system
ATARI

Slot Racers

Warren's first 2600 game was the combat racer Slot Racers, a game of little cars driving around in a maze shooting missiles at each other. And it was when he was reaching the end of this project that he began looking for inspiration for his next game idea.

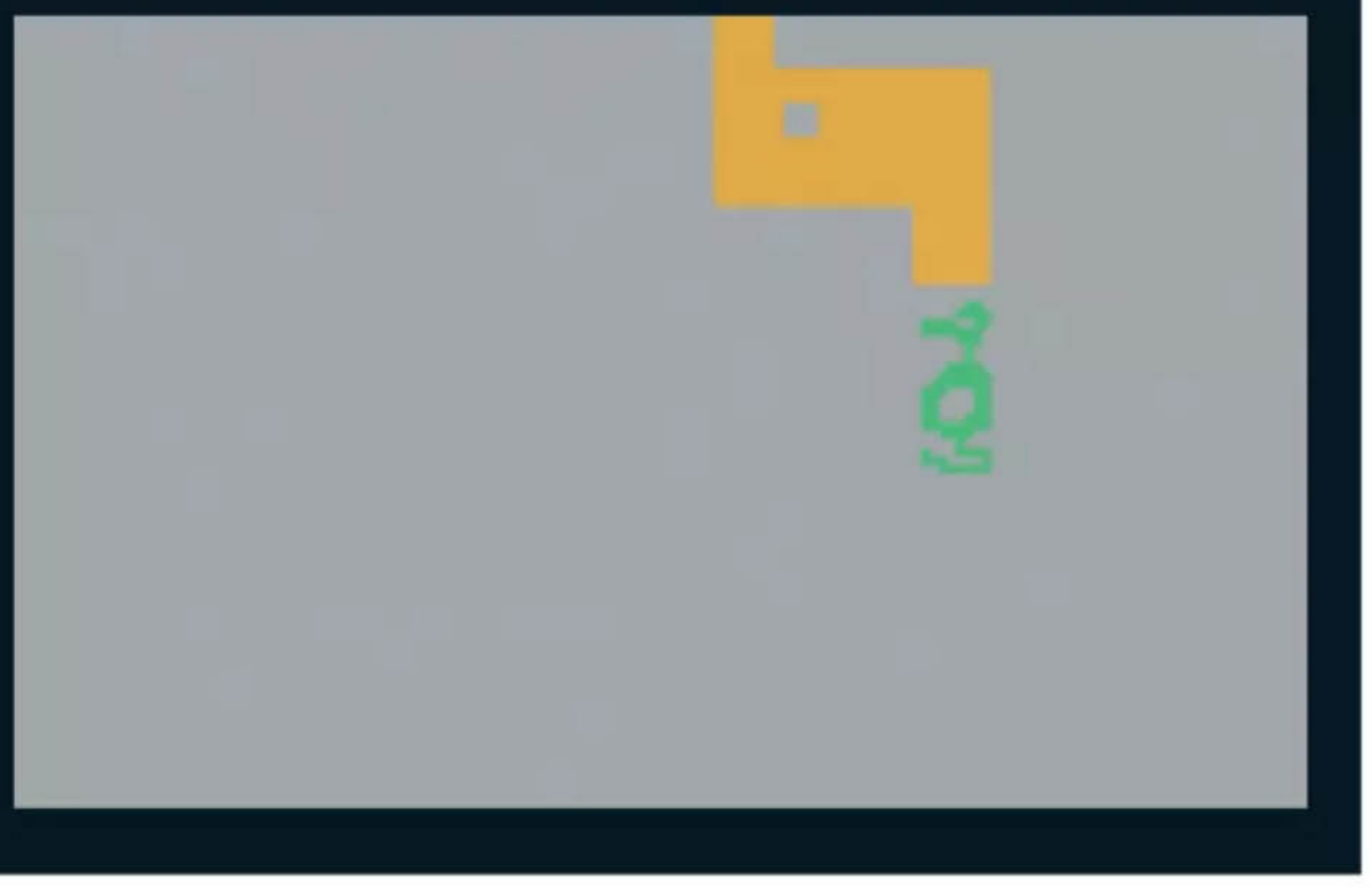
"My friend and housemate Julius Smith took me to the Stanford Artificial Intelligence Lab one day, where he worked, and we played the new sensation: the original text adventure game by Will Crowther and Don Woods. Its name was also Adventure, but it is more commonly known now as Colossal Cave Adventure. The game had

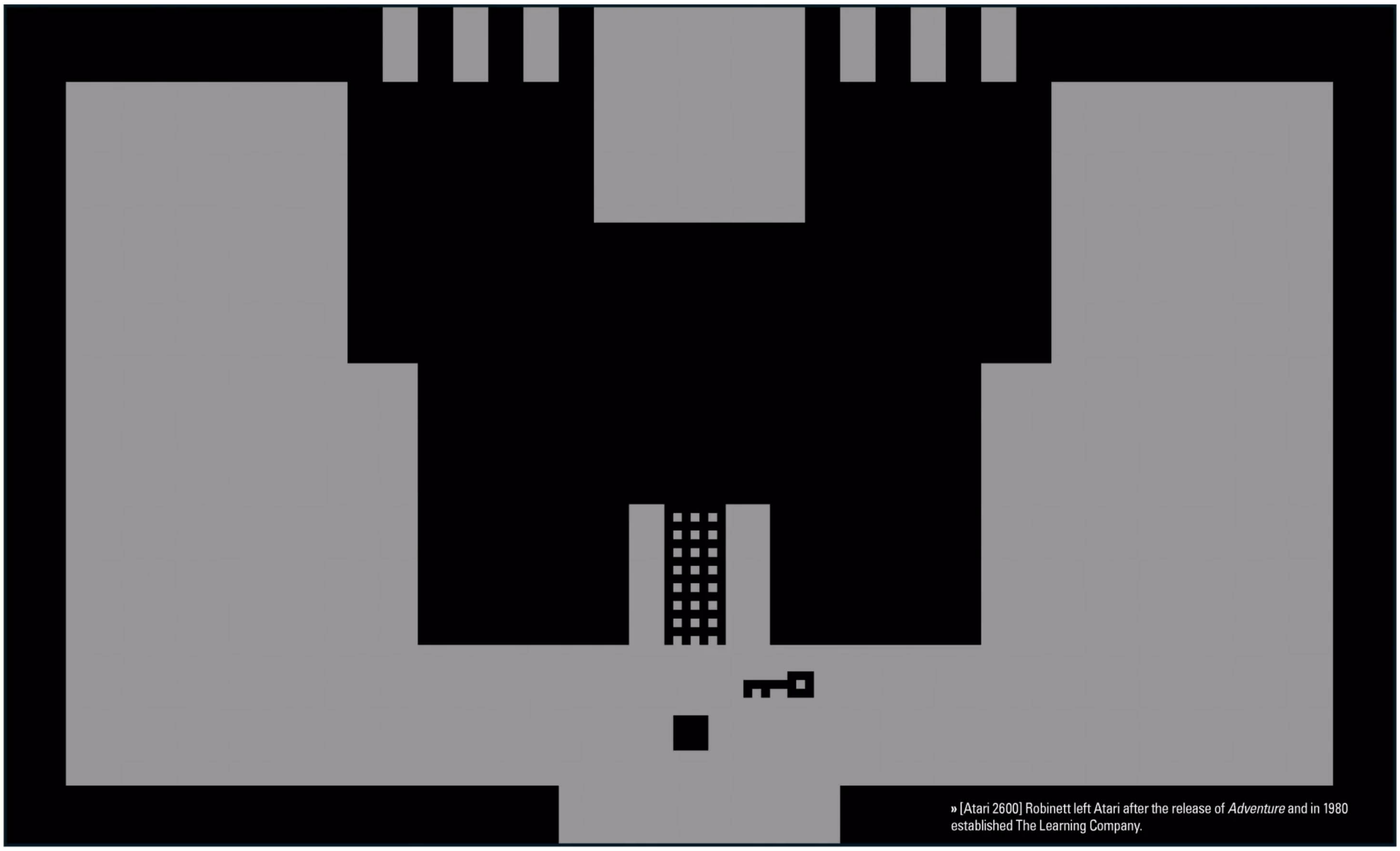
THE MAKING OF FOG OF WAR

As well as giving us the first ever videogame Easter egg, Adventure is also notable for pioneering the 'fog of war' game mechanic. Warren explains how he came up with the concept.

"That was my idea for making a more interesting maze. It used a video-priority trick that was based on a feature of the Atari 2600 display hardware. I made the foreground and background the same colour (grey), which would normally make the maze in the foreground disappear. But by surrounding the avatar with a large square orange object that was between the foreground and background, the maze was "illuminated" in a small region of the screen surrounding the avatar.

"I was actually trying to duplicate the dark rooms of the text adventure, in which you needed a lamp to dispel darkness. The square "circle of radiance" was the best the 2600 could do. In the end, I got rid of the lamp, because I only allowed one object to be carried, and you couldn't carry anything else. So the "circle of radiance" just turned on in certain rooms. I called these mazes "catacombs". I never used the words "fog of war".





» [Atari 2600] Robinett left Atari after the release of *Adventure* and in 1980 established The Learning Company.

no graphics, it was all text: you typed a command and it would execute your command, and then print out (in text) a description of where you were in the game world, and what objects or creatures were present there. I became enamoured with this concept (an interlinked network of rooms, which contained objects which could be carried from place to place, some of which allowed you to get past obstacles in the game) and thought I could transmogrify it into a videogame for the Atari 2600. My idea was to show one room at a time on the screen, and show objects in the room as little shapes on the screen, and show the player's position with another little shape."

Warren's boss though was unconvinced and felt such an idea so outlandish it needed to be quashed from the outset. A console with very limited technical resources designed to offer simple gaming experiences and basic adaptations of early coin-ops, an adventure game would be a stretch for the 2600. Even the numbers agreed.

"My boss at the time knew that Crowther and Woods's game required more than 100 Kbytes on a mainframe, and we had 4K bytes on the 2600," explains Warren. "So he told me it was impossible, and not to work on it. I didn't ever convince him. I defied him by creating the prototype of Adventure. He told me I was 'hard to direct'. My co-worker John Dunn laughed when I told him this, and said 'I'm impossible to direct.' Most other people at Atari could see it was an interesting new idea for a game."

Like many 2600 games developed at that time, Adventure was a one-man show. Not only did Warren come up with the concept, he also created the story, wrote the code, drafted the manual, and created all the graphics and sound effects, working 15 hour days at various points in its development. He even arranged his own QT, testing Adventure out on kids until he was satisfied. But while this autonomy allowed Warren to create Adventure entirely in his vision, its development wasn't entirely plain sailing.

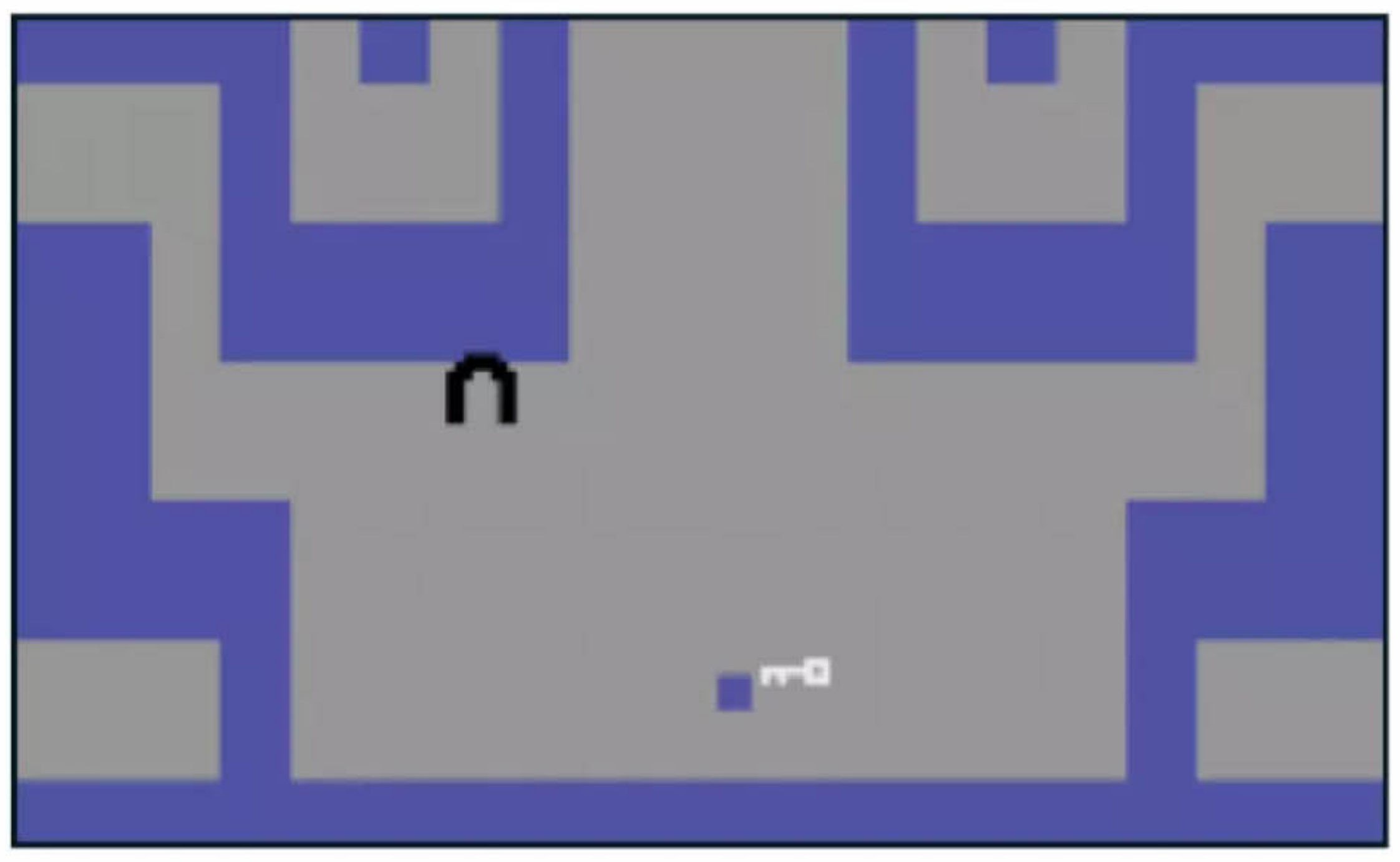
Dungeons, dragons and bridges

"Adventure took a year to create, from start to finish," says Warren. "But I got somewhat stuck when Adventure was in mid-development – stuck in the sense that I wasn't satisfied with the game, but wasn't quite sure what it needed. So I took a break from it for a few months, and implemented the interpreter for the Basic Programming cart. Then I finished up both Adventure and Basic at the same time. What I was stuck on was that it just wasn't that interesting with a network of big open rooms, and a few dragons chasing you. At that point, there were no mazes, no bridge, no bat, and no magnet. I wasn't sure, initially, that it would be possible to make asymmetrical mazes from symmetrical pieces (the maze graphics in each room were constrained to be symmetrical by the display hardware), but it turned out that you could make good mazes.

The existence of mazes provided a reason for the bridge object to exist – to cross maze walls – and a reason to invent the magnet – to retrieve the essential key you accidentally dropped in a maze wall. It wouldn't have been all that great a game if I had not been allowed the time to come up with all these different additional elements."

Of course, there was also the big issue of the 2600 itself, whose design goal was that it was supposed to enable the arcade games Pong, Tank, and "maybe a few other games", explains Warren. Adding that the 2600 was "the weakest possible graphics engine on which you could build a videogame" and breaking down the technical challenges he had to circumvent.

"The Atari 2600 had 4Kbytes of ROM memory (for program, graphics data, and sound effect data), 1/8 Kbytes (128 bytes) of RAM memory (for program variables and the stack) and a slow, weak processor: the 6502 (8-bit arithmetic, no multiply or divide instructions, no floating point, and clock speed 1.2 MHz). The graphics hardware was also very limited



» [Atari 2600] Atari's stance on not giving its programmers credit not only resulted in the famous *Adventure* Easter egg but also led to coders leaving the company to setup their own game studios – such as Imagic and Activision.

(just two decent hardware sprites, and a low-resolution screen with 160 x 96 pixels). It was hard to do much of anything on this system, with these resources. So it was critical to be a skilled and efficient programmer. Otherwise, you could not fit your program into the 4K."

Refreshingly colourful

Though previous role-playing game worlds were constructed from text, Adventure's world stood out by being bright, colourful and entirely graphics based. Though gamers below a certain age will probably consider Adventure's visuals to be crude and abstract, as touched on, Warren could only work with the limited tools and memory available, and this resulted in the hero of his game being a simple square and the three enemy dragons – Yorgle, Grundle and Rhindle – rather resembling something else.

"It never occurred to me that the dragons looked like ducks," says Warren. "Their behaviour was menacing – they chased you, and ate you if they caught you."

Beneath their menacing mallard-like exteriors though, they were pretty sophisticated beasts. "The dragons were actually implemented as finite-state machines." explains Warren. "A dragon had four states, which I called Chasing, Biting, Swallowed-Man, and Dead, and a different graphic for each. Its behaviour also varied according to what state it was in. Transitions between states were triggered by game events, such as the dragon touching the player's avatar (which I called the 'Man'), or by the sword touching the dragon. I also named the bat 'Knubberub', but this name never made it into the manual. Too weird, I guess."

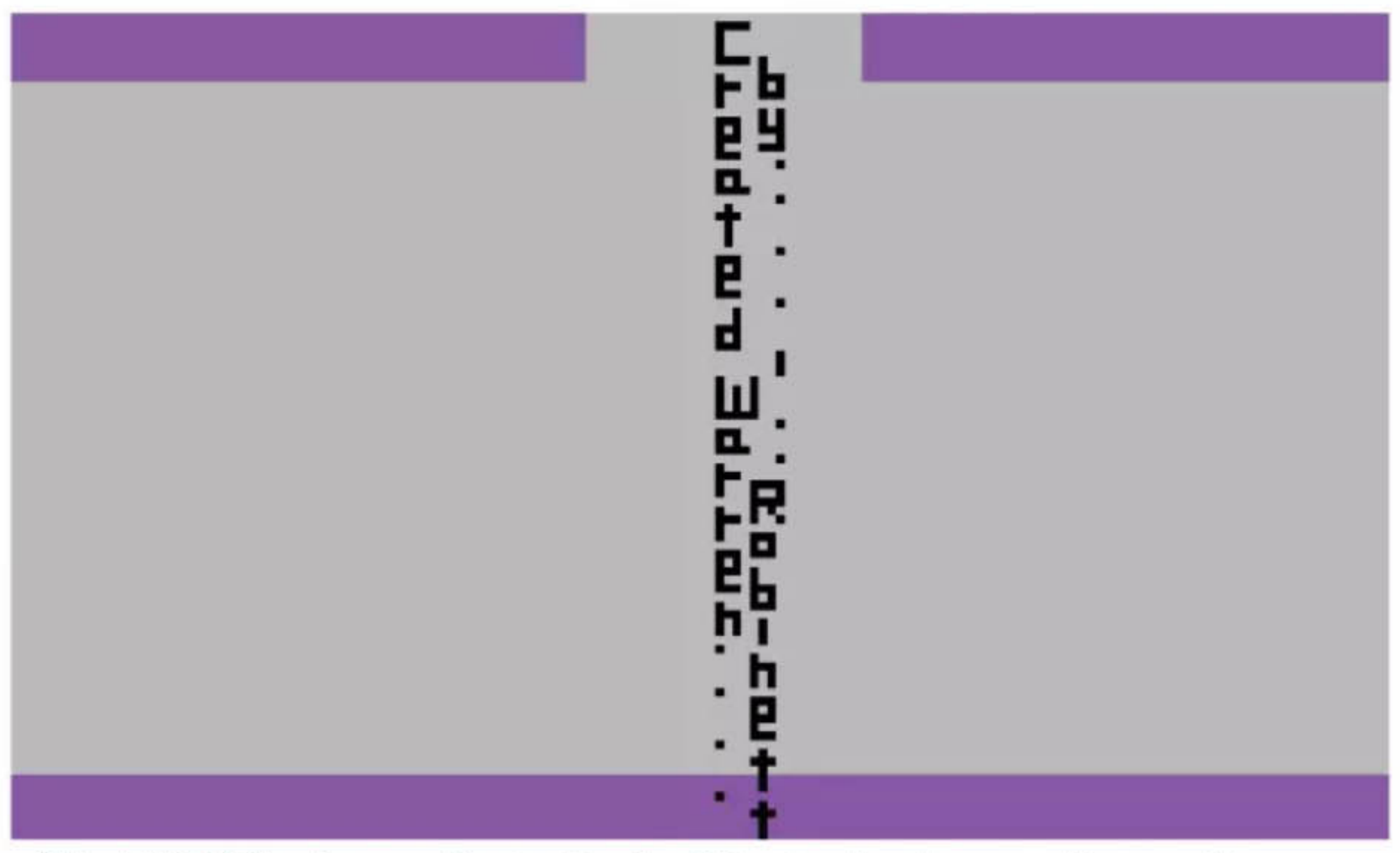
Given how hard Warren worked on getting Adventure the green light and made, it is understandable that he felt he should be given credit for all his hard work. But at the time Atari was notoriously against giving its programmers recognition in its games, a fact that led to an irritated Warren famously sneaking the credit 'created by Warren Robinett' into one of the rooms in the game – a cheeky act that inadvertently firmly secured his name inside videogame history books by creating the earliest known example of a videogame Easter egg.

So how did his bosses react as it was discovered? "I don't know. I didn't work there any more by then," says Warren. "The other game designers were amused."

We wondered if there was actually anything that Warrem wanted to add or implement in Adventure. Figuring we already knew the answer, we were surprised by the response that he gave.

"I was satisfied with it when I handed it off to be manufactured, but there was one thing I didn't get a chance to do. Since the 2600 had two joystick ports, but Adventure was a one-player game and only used the left port, it occurred to me that you could do something interesting with the other port. You could link two 2600s with a cable such that there could be two avatars, each controlled by their own joystick, and you would see each other if you entered the same room. In other words, make it a multiplayer game with two players in the same game world. I actually built the cable but I was nearly out of memory in the ROM, and did not try to implement this."

With that revelation ringing in our ears, and us pondering how amazing the game would have been with a friend, we finish up by asking Warren if he has played any of the sequels Adventure inspired. He tells us he hasn't, and we can understand why. We get a sense that Adventure was a personal project for Warren, but also a testing adventure he was satisfied he'd completed and was happy to close the book on.



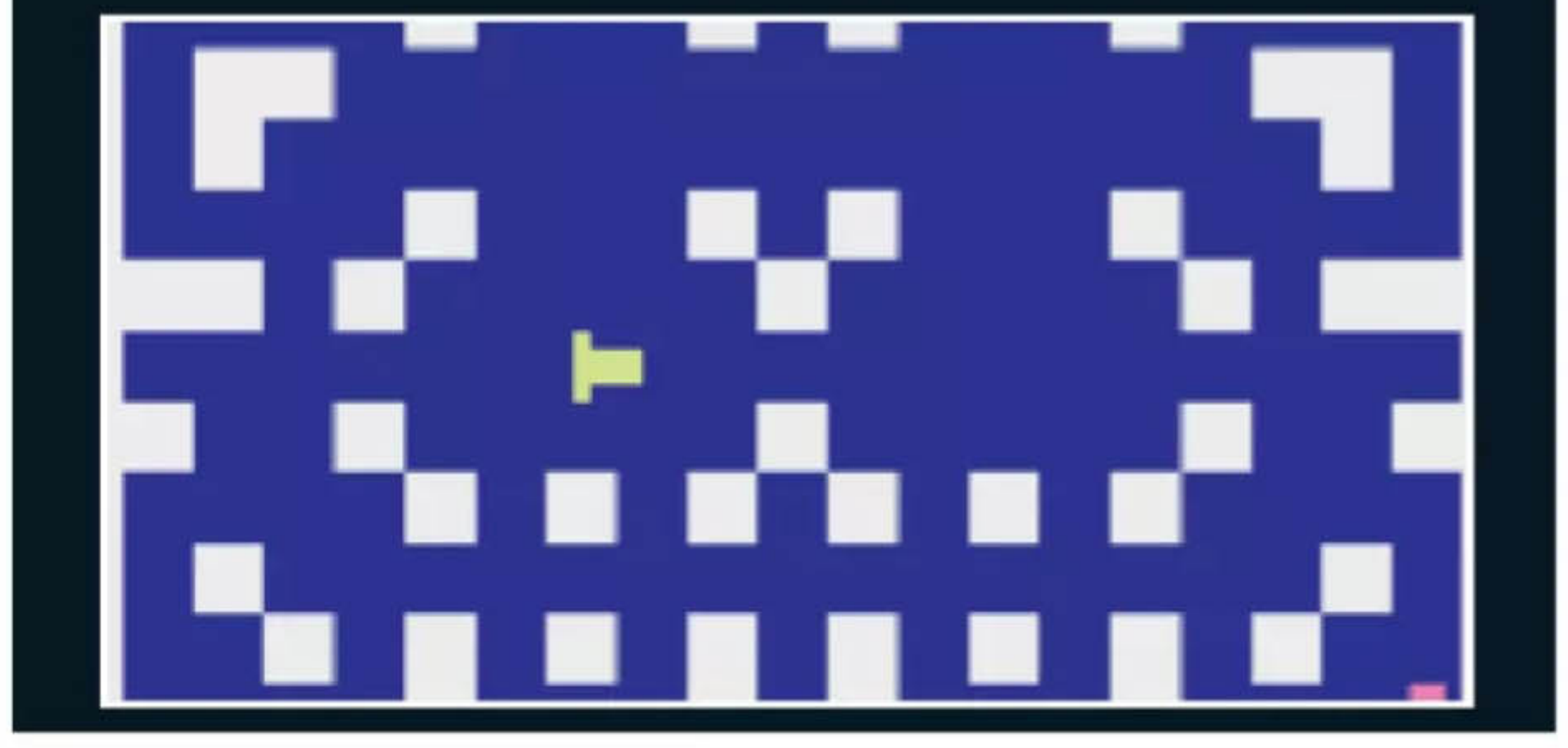
» [Atari 2600] The famous Easter Egg in all its cheeky glory, marking another gaming first for *Adventure*.

DEVELOPER HIGHLIGHTS

Slot Racers (PICTURED)
System: Atari 2600
Year: 1978

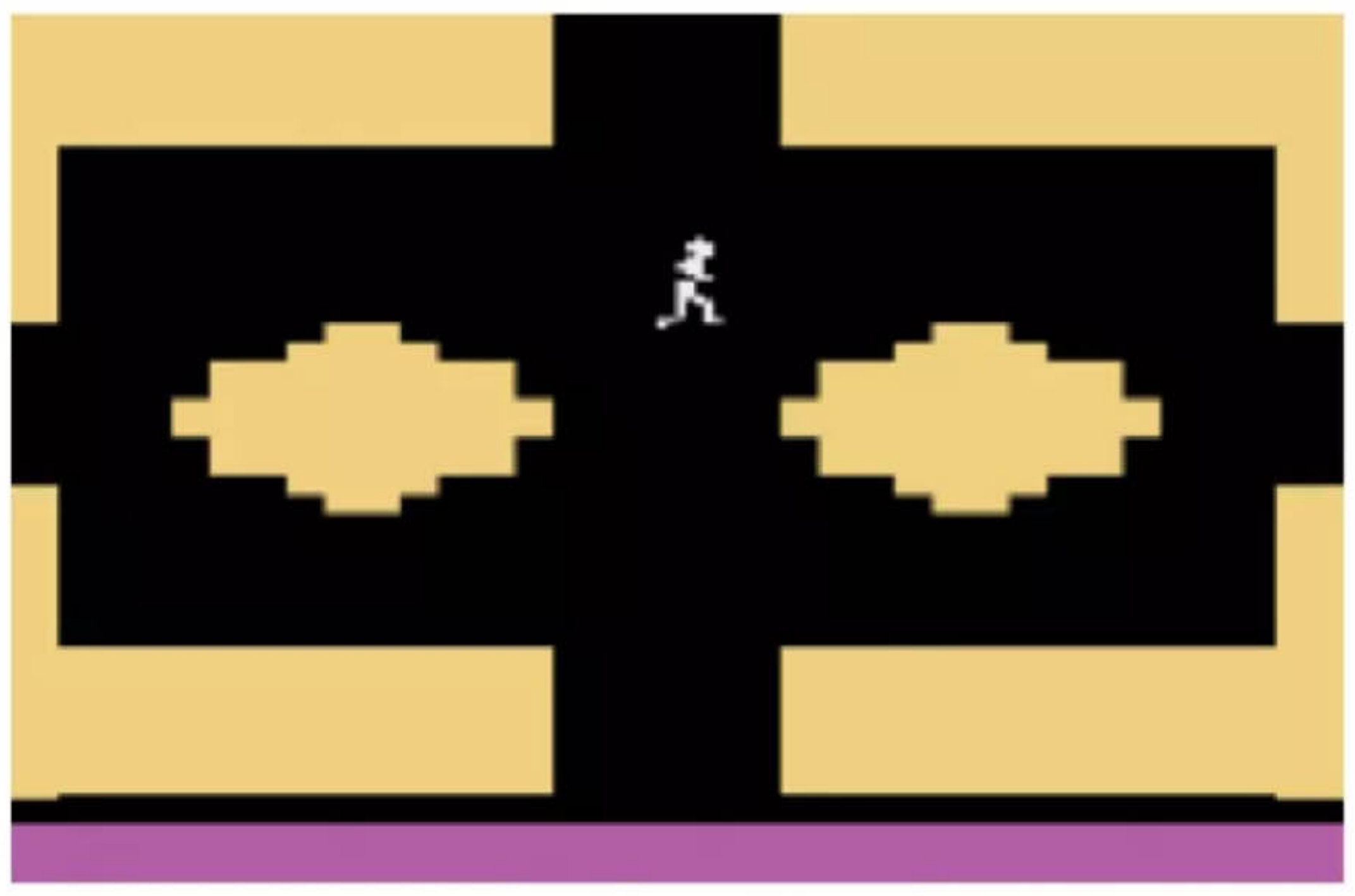
Missile Command
System: Arcade
Year: 1980

Pong
System: Arcade
Year: 1972



THE FURTHER ADVENTURES

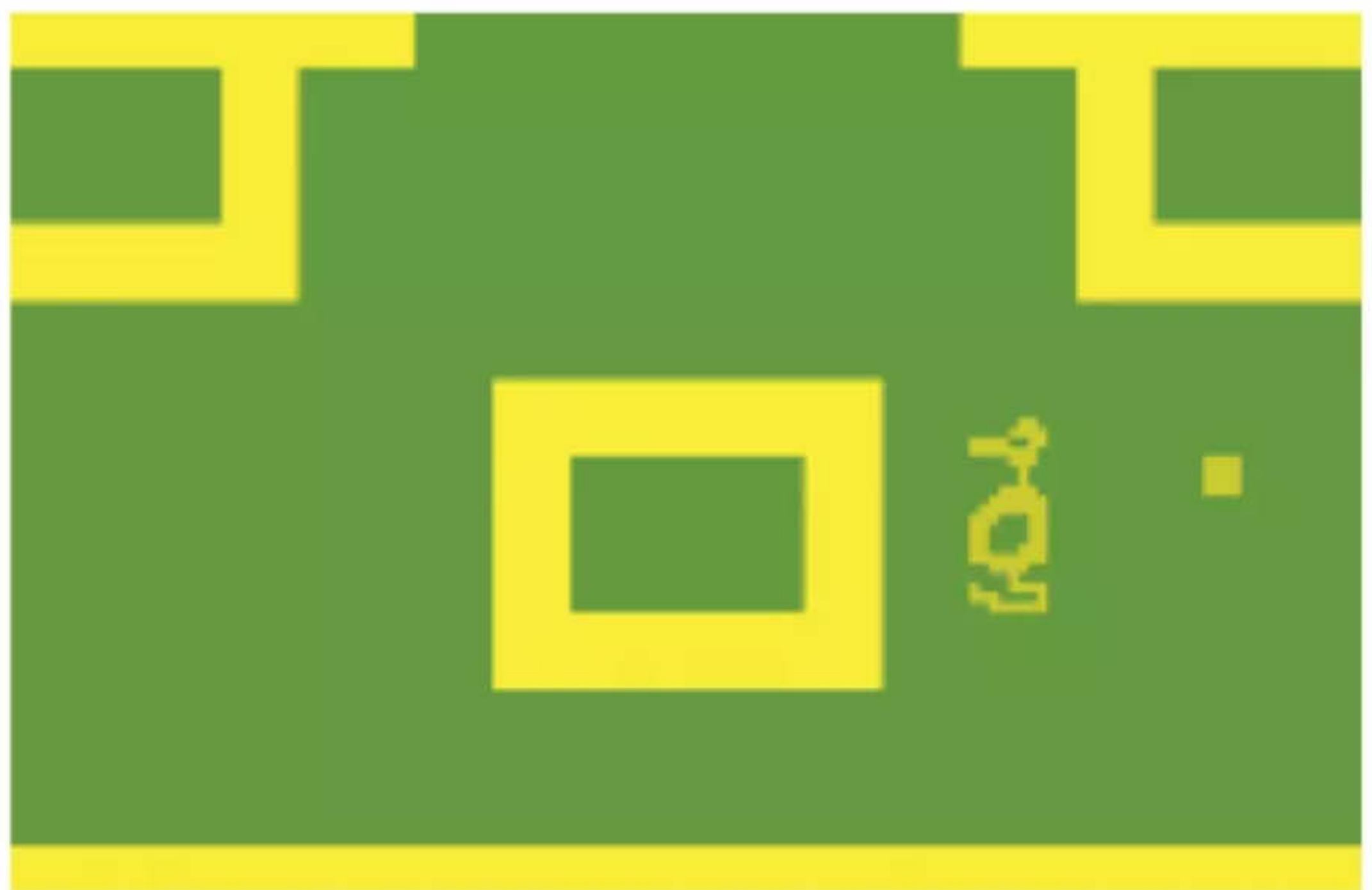
WARREN HAD NO INVOLVEMENT IN THE ADVENTURE SERIES AFTER THE RELEASE OF THE FIRST GAME, BUT THE SERIES HAS LIVED ON



SWORDQUEST SERIES

Platform: Atari 2600

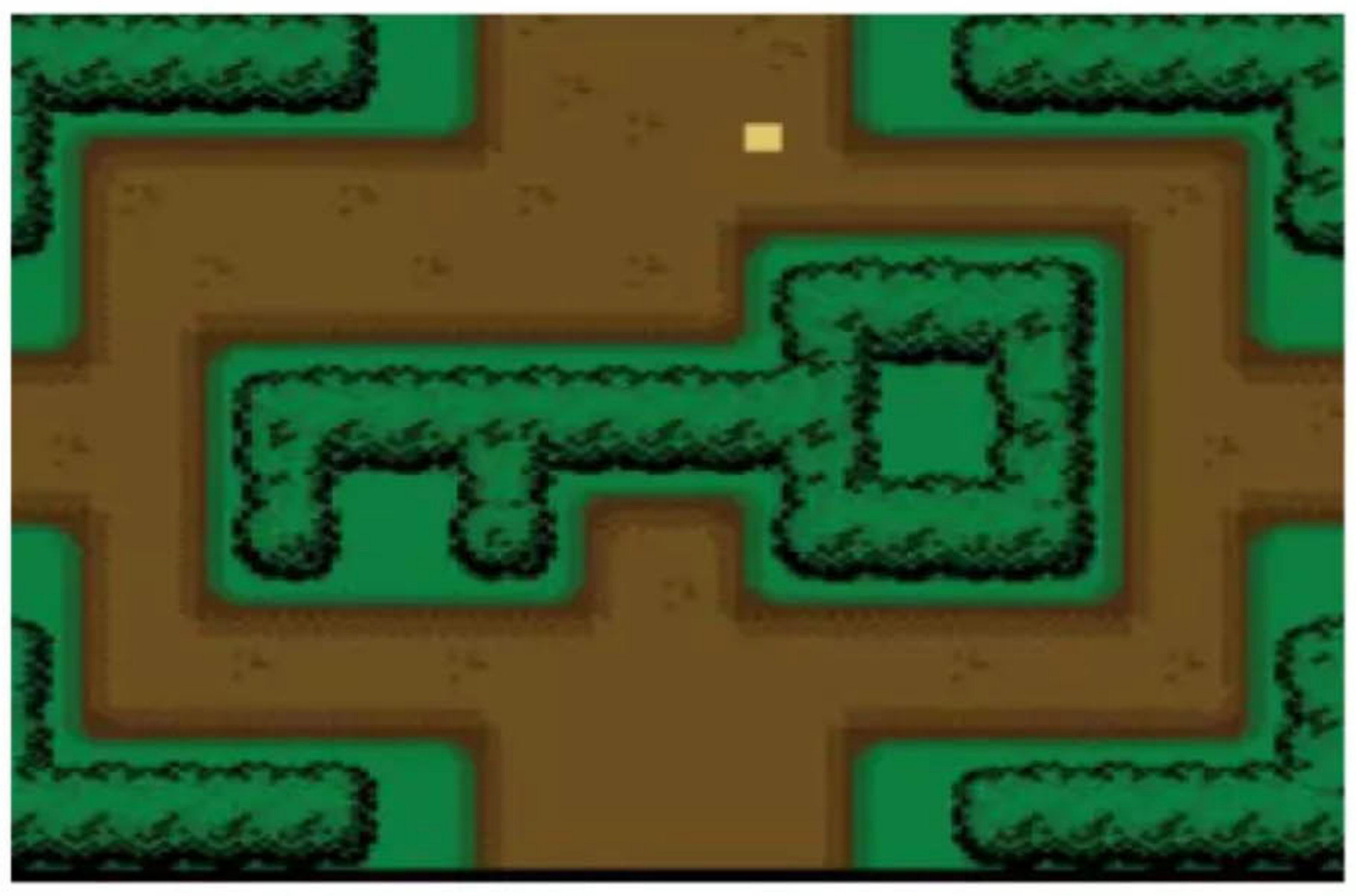
The first sequel to Adventure evolved into the Swordquest series, an unfinished symphony of four games tied to series of competitions. The series is notable for each released episode – Earthworld, Fireworld and Waterworld – coming packaged with a comic book which gave players vital hints and clues needed to finish the game.



ADVENTURE 2

Platform: Atari Flashback 2

In 2005, Curt Vendel wrote a somewhat posthumous sequel to Adventure for the Atari Flashback 2 dedicated console. Based on the original code, it reuses many of the object sprites – you can see the recognisable duck dragon here – from the original game but rearranges them to create an entirely new set of rooms for fans to explore.



ADVENTURE II

Platform: Atari 5200

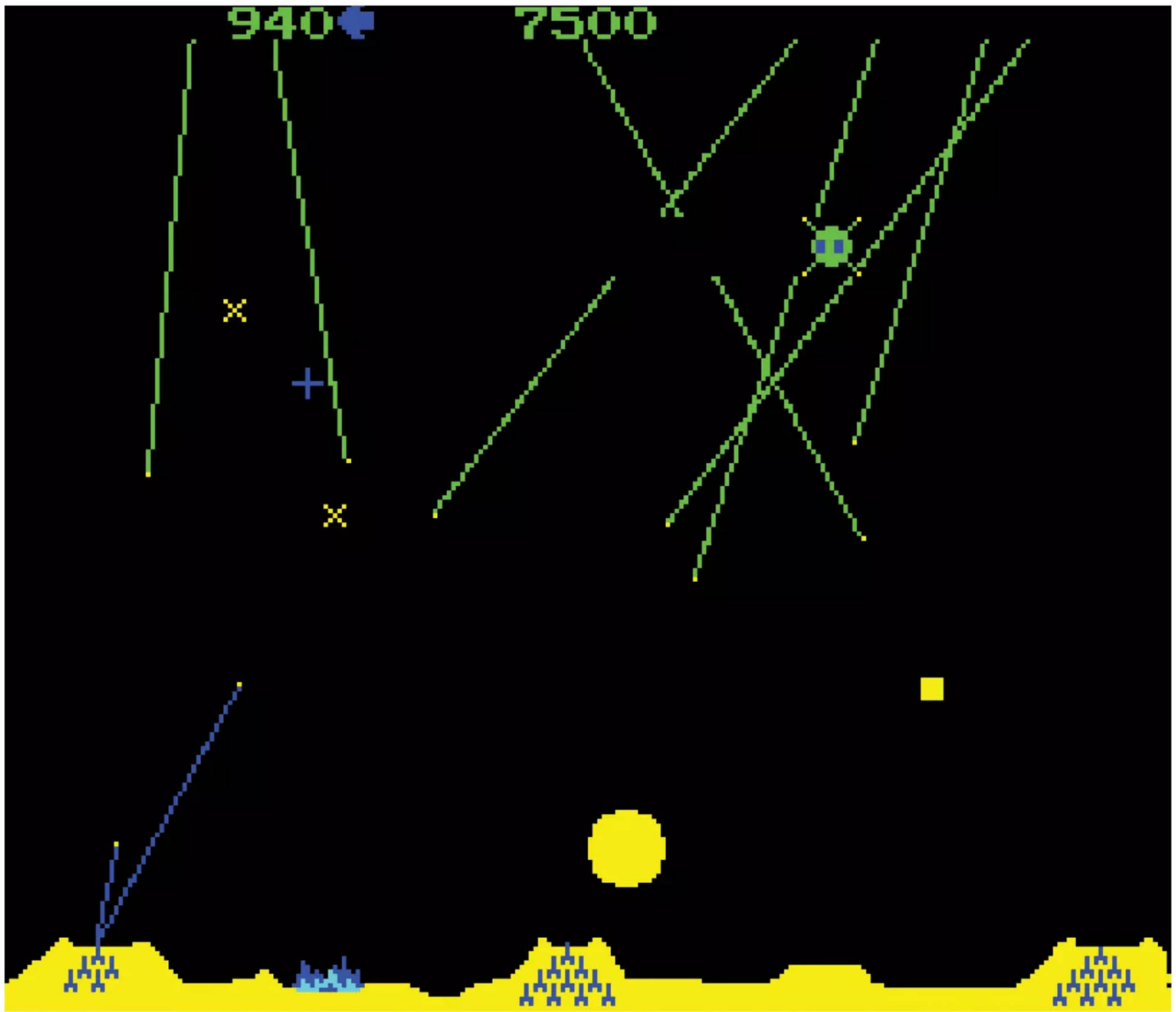
In 2007, Ron Lloyd and the popular Atari community website Atari Age were permitted to release a homebrewed sequel to Adventure for the A5200. With enhanced graphics (though your avatar is still just a square), plenty of games modes, and coming packaged with its own manual and box, it's a fine tribute to the original.

THE MAKING OF MISSILE COMMAND

VIVID NIGHTMARES, ERRANT MISSILES AND LIVING UNDER THE THREAT OF NUCLEAR WAR WERE JUST A FEW OF THE OBSTACLES THAT DAVE THEURER AND RICH ADAM FACED WHILE CREATING MISSILE COMMAND. DARRAN JONES INVESTIGATES FURTHER…

Dave Theurer is not an easy man to get hold of. The genius behind such arcade delights as *Tempest*, *I, Robot* and *Missile Command* is fiercely protective of his private life; so much so, in fact, that it's taken eight long years of gentle coercion and downright pleading for him to finally commit to an interview about one of the industry's most iconic and important arcade games.

Still, when you consider the sheer pedigree of Dave's title, the long wait has definitely been worth it, with the precise controls and intense pressure the game offers remaining just as refreshing today as the first time you dropped 10 pence into it.



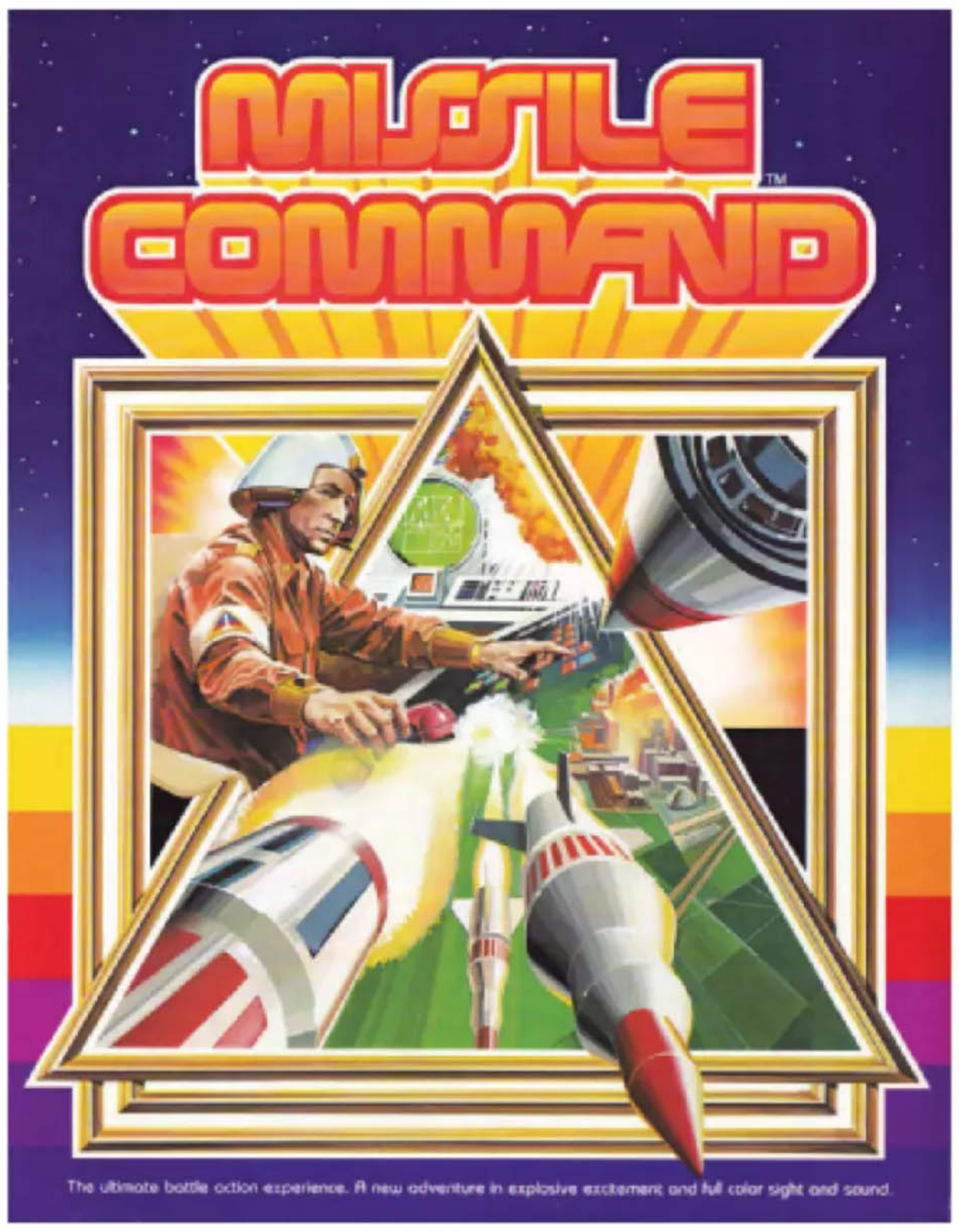
One of the most interesting facts about *Missile Command* is that while the gameplay mechanics are all Dave's, the concept itself actually came from higher up within Atari. "I remember my manager, Steve Calfee, told me to create a missile defence game wherein the player would defend against incoming missiles, which could be seen on a radar display," confirms Dave when we quizzed him about *Missile Command's* origins. "We took it from there, tossed out the radar screen and added cities, missile bases and so on."

It's a somewhat inauspicious start for one of the most iconic games of the Eighties, but with the constant threat of the USSR and nuclear war being high on the agenda, it's hardly a surprise that the concept had germinated in the mind of Atari (coin-op) president Gene Lipkin. The bleak link became even more obvious when names were being thrown about for the new project, with *Missile Command* being just one of the possible choices. "Some of the names I recall included Missile Command, Ground Zero, The End and Armageddon," continues Dave. "There were various pro and con reasons given for each name suggestion, but recognition was a key concern. Lots of people don't know the meaning of 'Ground Zero' and 'Armageddon'. I don't recall being too bleak as a factor. As I recall, Gene Lipkin suggested the name *Missile Command*. There was a general consensus that that was a really good name, so we went with it."

While the concept itself had been born from the Cold War threat, Dave didn't want to use *Missile Command* as an excuse to glorify something that, at the time, was considered a very real threat. "I wanted people to become aware of the horrors of a nuclear war. I didn't want to put players in the position of nuking entire cities, as entertainment, because it would desensitise them

IN THE KNOW

- **Publisher:** Atari
- **Developer:** Dave Theurer
- **Platform:** Arcade
- **Year released:** 1980
- **Genre:** Shoot-'Em-Up
- **Expect to pay:** £1,000+ ($1,500)


MISSILE COMMAND
TM
The ultimate battle action experience. A new adventure in explosive excitement and full color sight and sound.

> “I DIDN’T WANT TO PUT PLAYERS IN THE POSITION OF NUKING CITIES AS ENTERTAINMENT”
>
> DAVE THEURER

from such horrors,” he explains. “However, a defensive position was acceptable, since what’s nobler than saving 10 million people from annihilation? The final lesson, though, is that nobody wins in a nuclear war, and that’s why we have ‘THE END’ explode to fill the screen, after all the cities are gone.”

It’s something that Rich Adam, *Missile Command’s* junior programmer, also touched upon when we asked him about the potential controversy that *Missile Command* might have attracted at the time. “I didn’t feel as strongly as Dave, but I certainly did not want to go into something that would simulate a true, aggressive World War III scenario,” he begins. “We touched on it to a point, but our concept was always [that] we’re blowing up pixels. It’s an abstract, conceptual game. It was certainly in our collective minds, but it was not something that dissuaded us or diverted us from trying to make something fun.”

Despite the general concerns that were connected to *Missile Command*, Dave, Rich and the rest of the team remained resolutely excited about the project. After all, this was the beginning of the videogame industry, and it was an incredibly exciting time for everyone involved. “During the first few years, we felt like pioneers,” recalls Dave with an obvious sense of pride. “There weren’t many [video] arcade companies at the time. There weren’t many game development tools either. We had to develop most of them in-house. I’m not sure we thought about it that much, though. Mostly we just thought about how we could make our games more fun to play.”

It’s a sentiment that Rich wholeheartedly agrees with: “It was an outstanding environment to work in and we were lucky because we were filling the void. Every idea was fresh and new and hadn’t been tried before, and that was really fun. Nowadays it’s very hard to come up with something novel and different.”

As with many of Atari’s games, *Missile Command* was built from the ground up, meaning that Dave and the rest of the team didn’t have the benefit of using an existing engine, something that is commonplace in today’s industry. “You were always bringing out new hardware in that day and age,” explains Rich, “so that was one of the key difficulties faced with new projects.” The constant creation of new custom-built technology also meant that there was a strong relationship between Dave and the rest of the hardware team while *Missile Command* was being created.

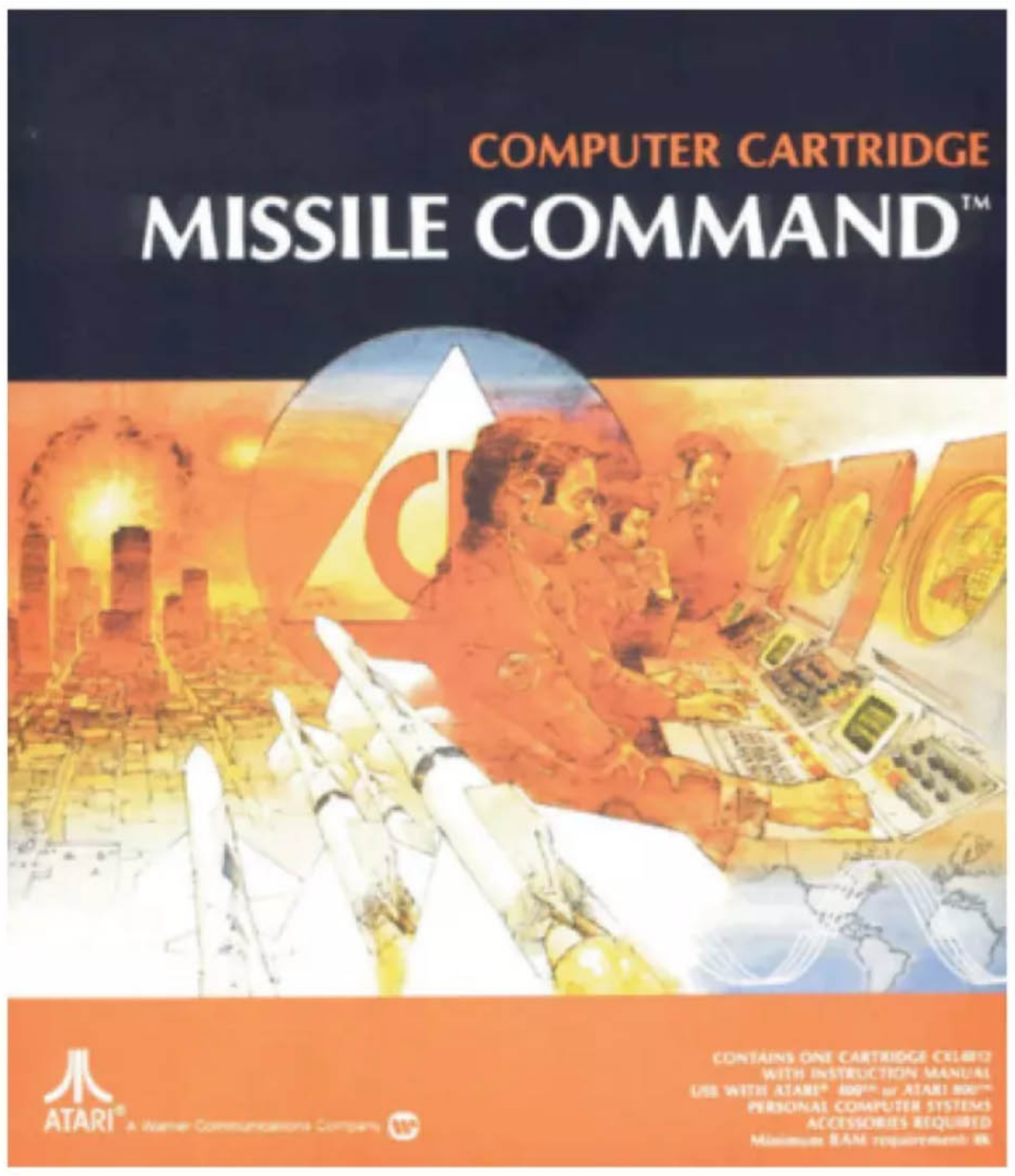
“The hardware designer designed the custom hardware just for this game,” explains Dave about *Missile Command’s* early development. “He knew that the bottom portion of the screen needed more colours for the cities, bases, land, etc. No other game, except for a possible sequel, was planned for this hardware. The hardware designer, Dave Sherman, was excellent, and quickly came up with a design, which was wire-wrapped for development purposes.”

It was at this point that we were keen to find out if any other system other than a trackball had been considered when *Missile Command* was first pitched. “My recollection is that it was going to be a trackball from the start and it never deviated from that,” confirms Rich. “From the moment we implemented it, it was pretty obvious that the trackball was optimum.” “We were using trackballs in a lot of other games at the time such as *Soccer* and *Football* before *Missile Command*,” continues Dave. “It seemed like a good match, so a trackball was planned from the beginning.”

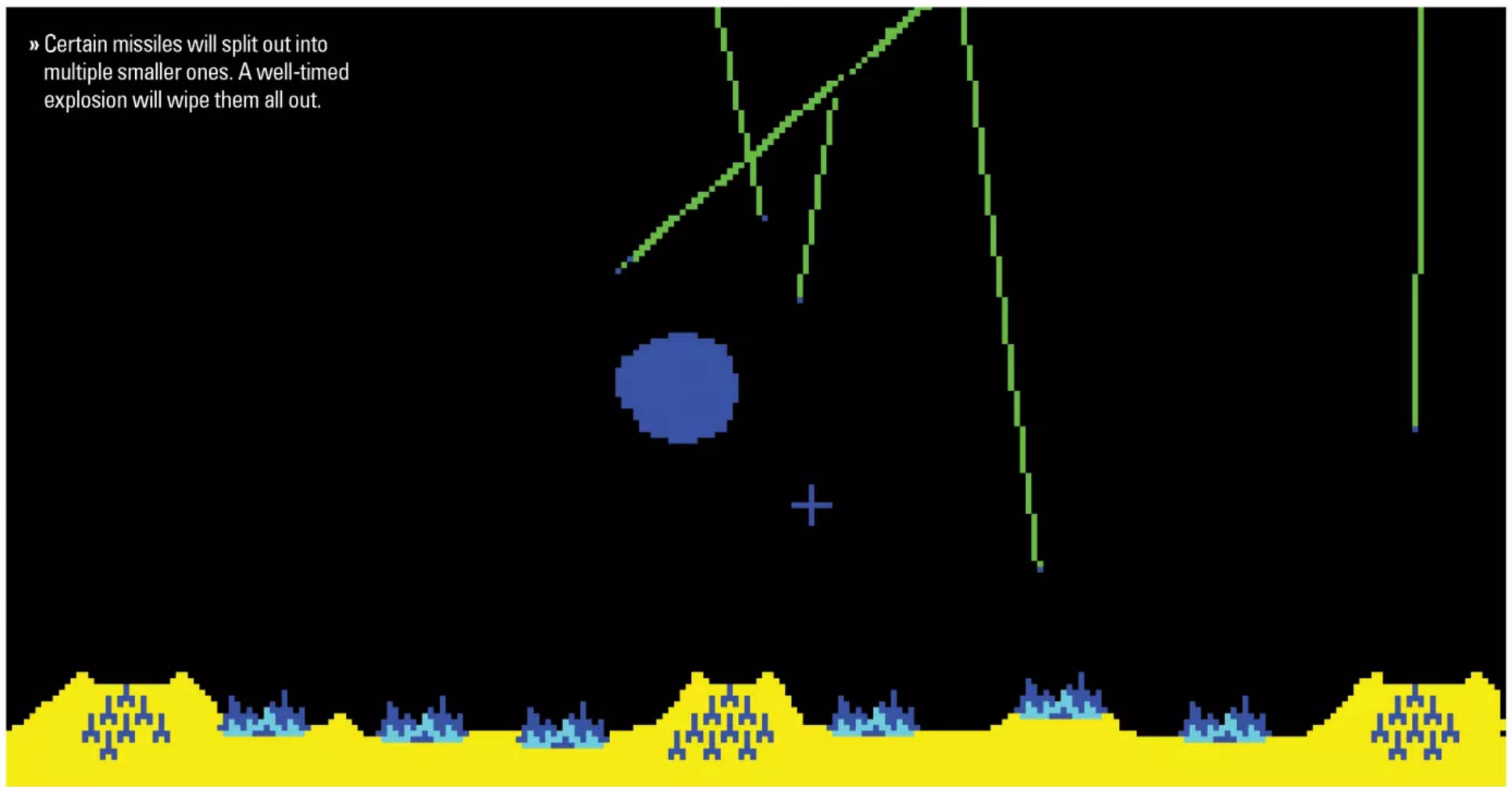
A WORD FROM LYLE RAINS

We managed to speak to Atari’s former senior executive about the popularity of *Missile Command*, and here’s what he told us. “Dave Theurer, as was also the case with Tempest, did a fantastic job of tuning the pacing of the game as well as making the controls as responsive as they are.

“Atari certainly did not shy away from battle simulations in our products, although we avoided direct bloody violence on human avatars and mobiles for about two decades. But the world in 1981 was still involved in the Cold War. The idea of nuclear holocaust on cities added an extra edginess to *Missile Command* that resonated with some folks as being a bit too close to home. One could speculate that, as part of the popular culture of the Eighties, *Missile Command* even had some subliminal influence on defence policy-makers, as they contemplated the so-called ‘Star Wars’ missile defence system. If they had actually played the game, they would have known that you always ending up losing.”



» The instruction manual for the Atari 8-bit. You just don’t get artwork that looks like this anymore...



» Certain missiles will split out into multiple smaller ones. A well-timed explosion will wipe them all out.

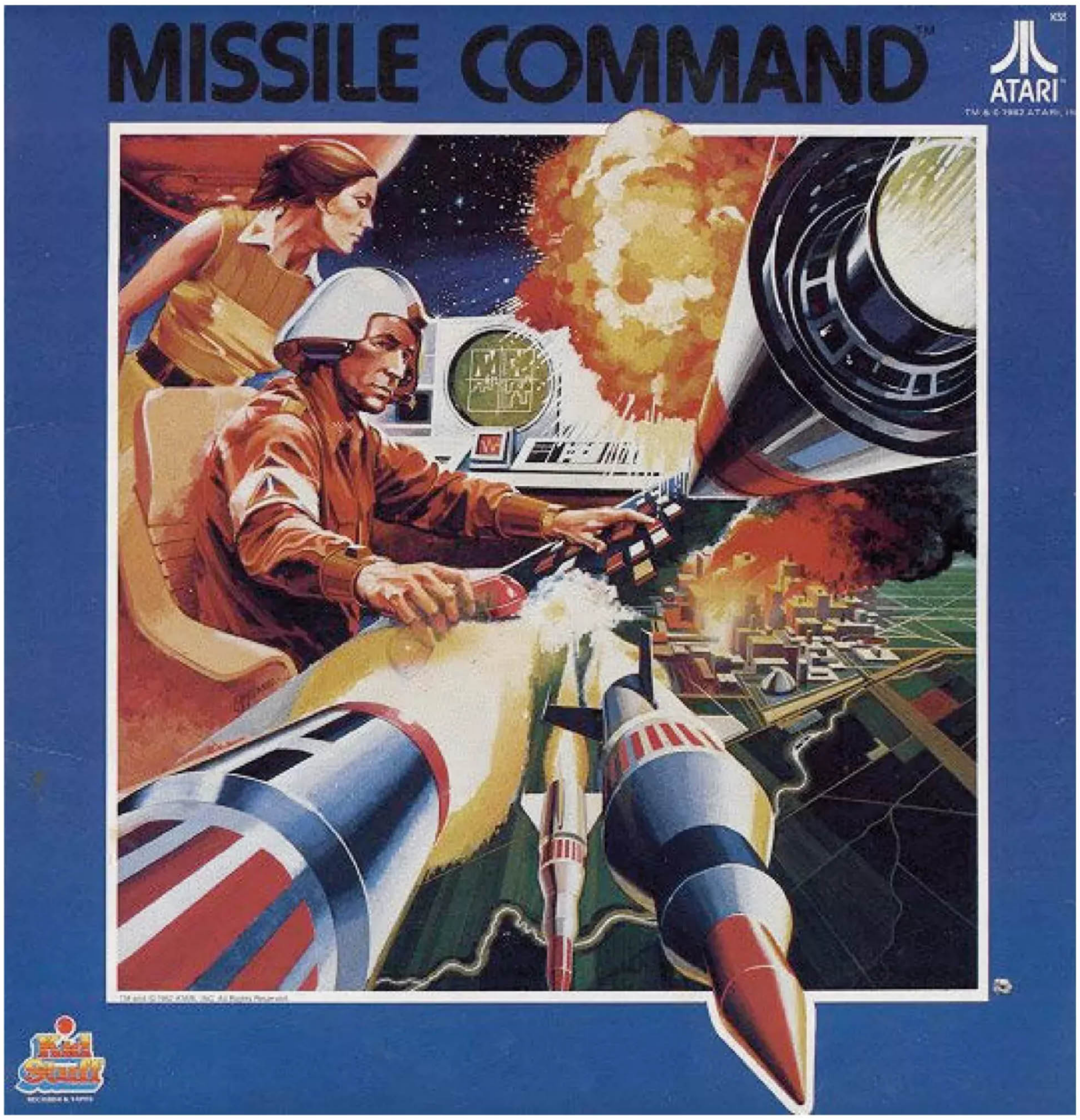
While the trackball easily made the transition from prototype to final games, many other aspects of *Missile Command* weren't quite as lucky, with numerous ideas being dropped during the game's gruelling six-month development period. "When I was first creating the coastline you were defending, I pathetically tried to create a Californian-looking coast that turned out to be awful-looking," recalls Rich. "Lyle [Rains] was the one who eventually came up with the fortress-looking cities that you had to defend."

The ability to blow up real-world cities, even if they were depicted by simple pixels, was soon ditched, which in turn helped distance the game from any possible real-life connections. There were plenty of other ideas that were tested, but they too quickly fell by the wayside, as they just didn't appear to be suitable. Dave reveals some of the other ideas that were implemented at various stages of *Missile Command's* development and goes on to explain why they were eventually ignored: "Submarines would pop up and shoot missiles, which didn't make sense, as every other threat was coming from the sky. Railroads hauled missiles between the cities and the bases, but it [was deemed] too complicated for players. There were programmable names for the cities, which made it more relevant for players in areas near the named cities, but less relevant for players out of the area, but it was too much work for operators to program in the cities' names. There was also a giant physical display above the monitor containing flashing lights, status indicators and other elements. It was too expensive, too hard to maintain – light bulbs too hard to replace – and too hard to play the game and watch this external display."

In addition to numerous gameplay changes, *Missile Command* presented plenty of technical challenges for the developers, many of which were being encountered for the very first time, which was hardly surprising at it was still the start of the Eighties and gaming itself remained relatively new. "The entire program had to fit into approximately 12K and it was written in assembly language," recalls Dave about one of the annoying issues he faced while he was working on the game. "We also had to come up with lightning-fast methods for drawing lines and circles in real-time so that motion would be smooth, and we were constantly working within the hardware limits: the narrow bottom section at the bottom of the screen for land, cities and missile bases had more colours than the rest of the screen."

Rich remembers how the large number of on-screen missiles and smart bombs that the game had to handle also ended up proving to be a problem for the trailblazing pioneers: "Dealing with the new hardware and making sure that it was up and running and good to go was hard enough, but in terms of development, creative and fun factor it was probably those smart bombs." He continues: "It was just their behaviour. I think a lot of what they did was targeted to a specific city, but they avoided and tried to go around and would use colour detect in their near region to decide if they were going to plough into a bomb or an explosion area. In that day and age we were trailblazing, but in today's world they are now trivial problems. Getting them to do the right thing and behave intelligently had less to do with time on screen and more to do with the avoidance of getting blown up."

Despite various kinks, Rich feels that the creation of *Missile Command* remained a fairly organic experience for the most part and has many fond memories of working on it. "We did the original incoming missiles and that was cool but not enough, and so we added the satellites and the planes and the things that dropped them. That was more and better but maybe not quite enough, and so we added MIRV missiles, and that was more and better but not quite enough, and then we added smart bombs and that turned out to be enough. And that's really the kind of evolution of how games are created. You take the core of what you're doing, you make that and see if it fits. It was such a



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AN EXCITING READ—ALONG ADVENTURE BASED ON YOUR FAVORITE ATARI VIDEO GAMES.
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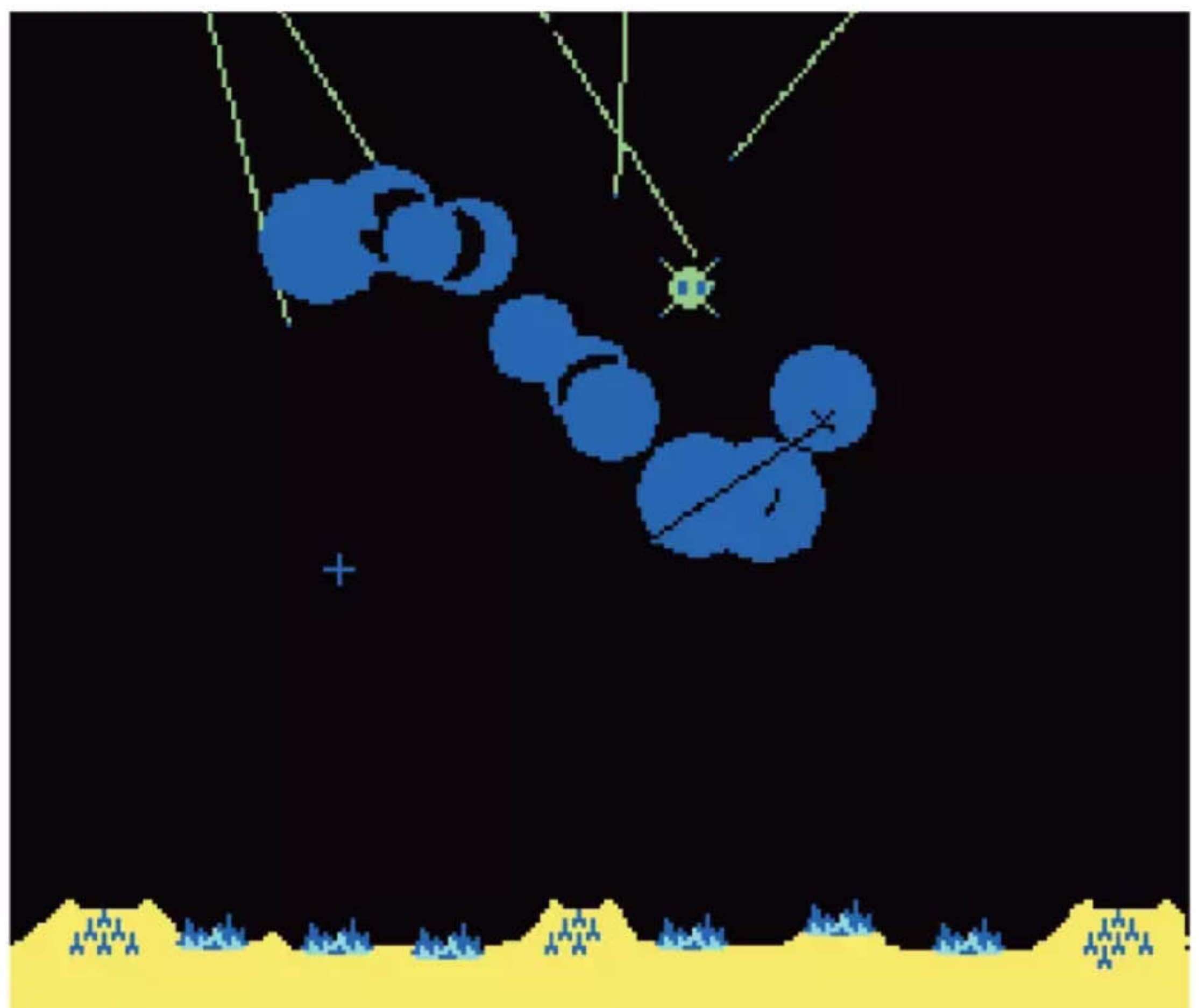
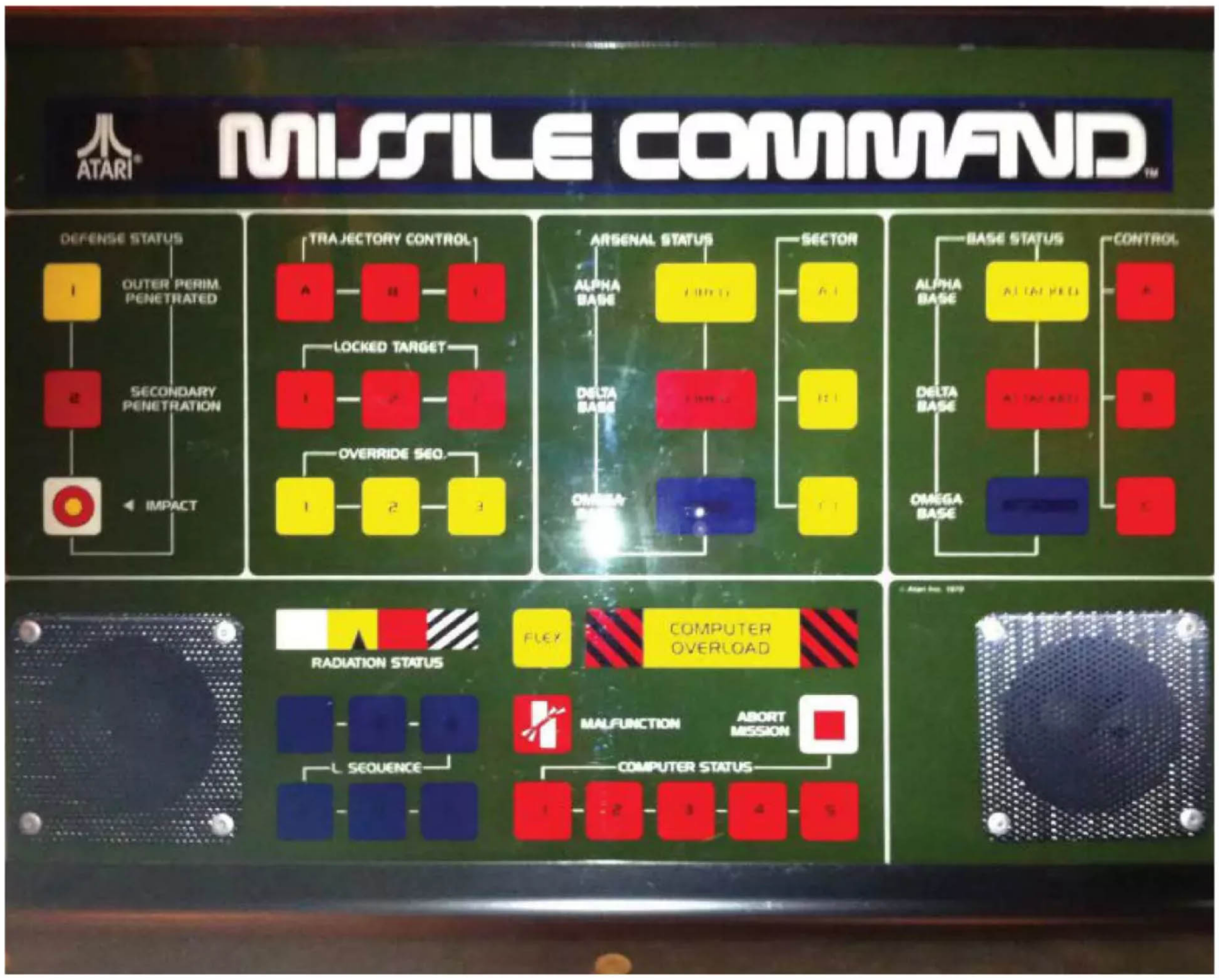
» **Above and left:** There was assorted memorabilia created for *Missile Command*, including an album, a collector's pin and even an audiobook set.



» The trackball was essential to mastery of *Missile Command*. A joystick would never allow you to deflect incoming missiles on later stages.



» Dave kindly supplied us with this image of the original top that was considered for *Missile Command*. The expense and maintenance of the lights coupled with the distraction it caused meant it was quickly dropped from the final game.

simple concept, and the additions that we made were so simple, that it became one of those games were everything kind of fell into place."

With a prototype finished, it was time to put *Missile Command* on its all-important field test. This was a crucial time for any new game, as the amount of coinage that was pulled in would always decide if there was any point in finishing the project. Even before the field test, though, Dave was convinced that they had a hit on their hands: "I'd be asking co-workers to step back from playing the development prototype so that I could continue working on it," he recalls.

Rich was also pleased with how the field test was received, and, like Dave, he was convinced that they stood a far better chance than other games. "You have to realise that this was one of the first colour games, so it had this gigantic advantage over all its competition," he begins. "I remember some young guy who was probably in the military. He was looking at the game and he had simplified technology into thinking that everything was simply a new chip. He had this unabashed excitement and enthusiasm and was like, 'Oh, man. Look what's in that new chip!' His reaction on test was basically saying: 'Look what technology is bringing to me.'"

After its successful field test, *Missile Command* rolled out into arcades, quickly going on to become a massive success for Atari; although the game's gruelling schedule did leave its mark on Dave, who suffered from regular nightmares about nuclear attack for several months during and after the game's development. Despite those nightmares, Dave remains incredibly proud of his work on *Missile Command*. "We saw co-workers' excitement with it when they came into the lab to play it during development. We had developers from the Atari VCS system that would drop by – they were in the same building – and play it for hours in our lab. We saw the players' excitement when we put it out on its first field test. We saw collections in all the field tests. It was a very positive experience from start to finish."

"I'D BE ASKING CO-WORKERS TO STEP BACK FROM PLAYING SO THAT I COULD CONTINUE WORKING ON IT"

DAVE THEURER

Rich is also pleased with the way the game turned out, citing the power it gave you as one of the reasons for its enduring success. "It's a good feeling to have control over an incredibly complex machine, to have a machine give you that gratification of controlling such a complex piece of equipment for a quarter is a hell of a bargain. Power and ego is fed by that, so that's what we were selling and, to a degree, what videogames continue to sell."

Special thanks to Dave Theurer and Rich Adam for their precious time, Martin Goldberg for additional advice and pictures, and to Paul Drury for making an eight-year quest finally come to fruition.

INCOMING MISSILES, ABORT, ABORT

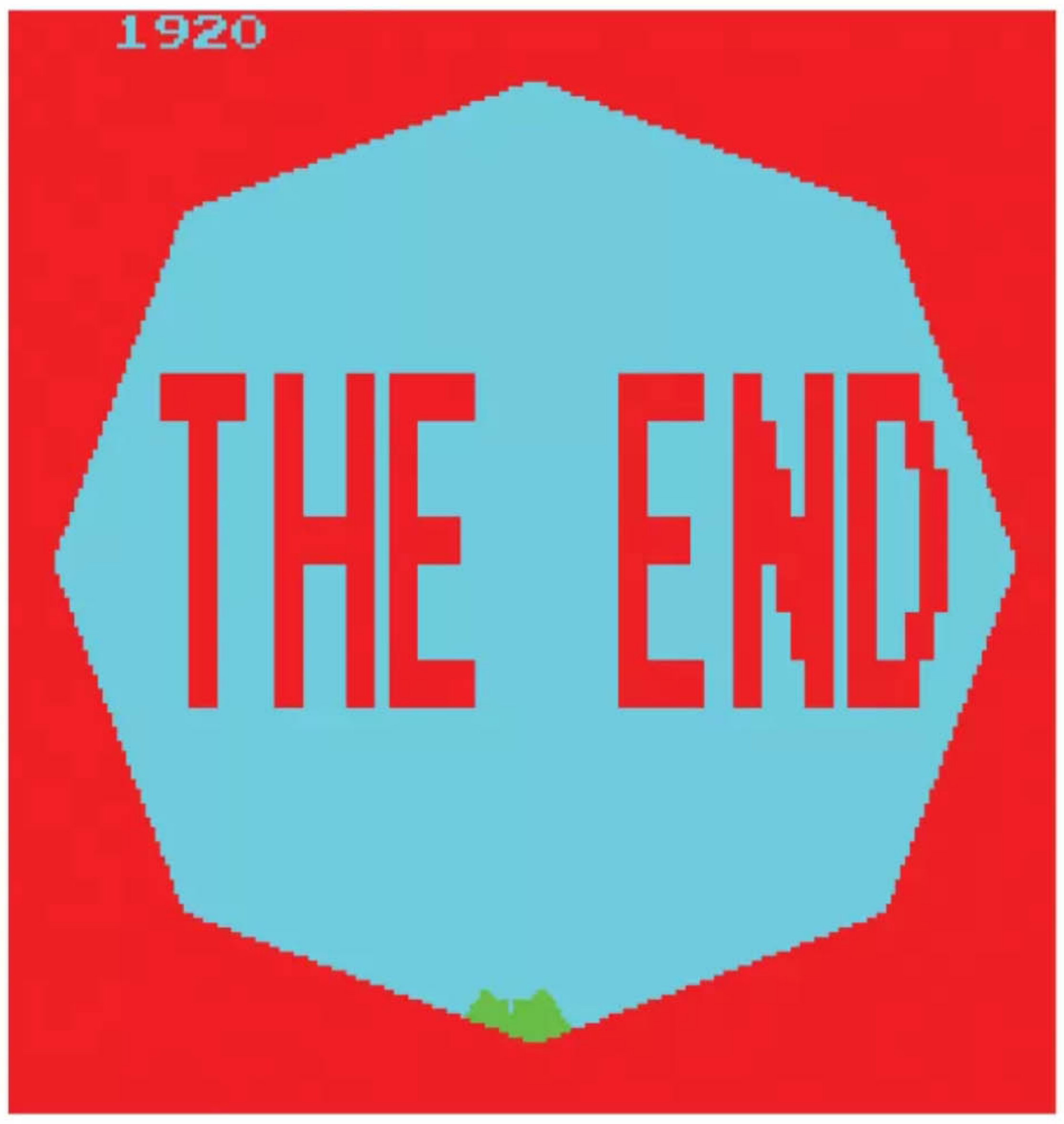
Missile Command was a massive success for Atari, so it should come as no surprise to learn that a sequel was soon in development after the original continued to pull in the crowds years after its original release. Having cut his teeth on the original game, it was finally Rich's turn to shine as the game's creator. Unfortunately for him, the original sequel hit a number of key issues, meaning it never reached the arcades. This in itself is something of a pity, as his description of *Missile Command 2* fills us with excitement at what might have been had Atari managed to actually release it.

"It was simultaneously two player," he begins about the now long-dead sequel, "We turned the monitor on its side and tried to get a two-player version of the game up and running, where you attacked each other. It was a really challenging concept, but it just wasn't as fun to multitask – at least I couldn't get it to be fun – and try and go over and launch accurate missiles at opponents, while playing defensively against launches from another player.

"I think [that] the main issue with *Missile Command 2* was that the computer launches could be way more efficient and rapid about laying down missile launches, as opposed to humans who had to manipulate the trackball. In that sense it was difficult, and people were so satisfied with the way that the mechanic of *Missile Command* worked that it just didn't do much. I never solved the design for using two players simultaneously, and I just could not make it fun. The screen real estate was another issue, as you actually had a smaller, narrower area to defend. That was my game and we eventually killed it because it just didn't earn. When you started a project you knew that there was a 50 per cent chance that it was never going to get to production. It was a really competitive environment, though, and I wanted to make something really cool. I wanted to have the next big hit game for us."

Sadly, with *Missile Command 2,* it just wasn't to be. What a shame…

» Dave was keen that *Missile Command* didn't glorify nuclear war, using the end screen to explain that, in such a circumstance, everyone loses.



THE MAKING OF BATTLEZONE

PROBABLY THE FIRST WORKING EXAMPLE OF UPDATING A 2D ARCADE CLASSIC TO 3D, TANK-COMBAT SIMULATOR BATTLEZONE WOWED THE EIGHTIES ARCADE-GOING PUBLIC WITH A MIX OF INCESSANT ACTION AND VECTOR-GRAPHICS GOODNESS. CRAIG GRANNELL TALKS TO LEAD PROGRAMMER ED ROTBERG ABOUT THIS ICONIC TITLE, AND HOW PLAYERS VERY NEARLY HAD A MUCH HARDER GAME TO CONTEND WITH

Although every inch the retro game with its vector graphics and simple gameplay, tank-combat simulator *Battlezone* was a prescient creation. Foreshadowing a common occurrence of the PlayStation era and beyond, the Eighties Atari effort was the first time a much-loved 2D classic was reborn in glorious 3D. Suitably, it was also largely driven by technology. "Well, it all really started with the advent of the vector generator," begins Ed Rotberg, the game's lead programmer and the brains behind other Atari classics, including *S.T.U.N. Runner* and *Steel Talons*. "Howard Delman developed it in response to Exidy's equivalent generator, and we realised that once we had it working, it wasn't a big step to doing 3D."

Tank busters

One brainstorming session later, and the idea of *Battlezone* emerged – a game pitting the player against hostile enemy tanks in what was at the time a truly unique immersive 3D environment. "The inspiration came from those early overhead-view tank games, which everyone loved," explains Ed. "And our game was the first to market with true 3D – Tim Skelly's *Tail Gunner* from 1979 was on-rails and there was no environment, just stars… and there's not much to doing stars in 3D!"

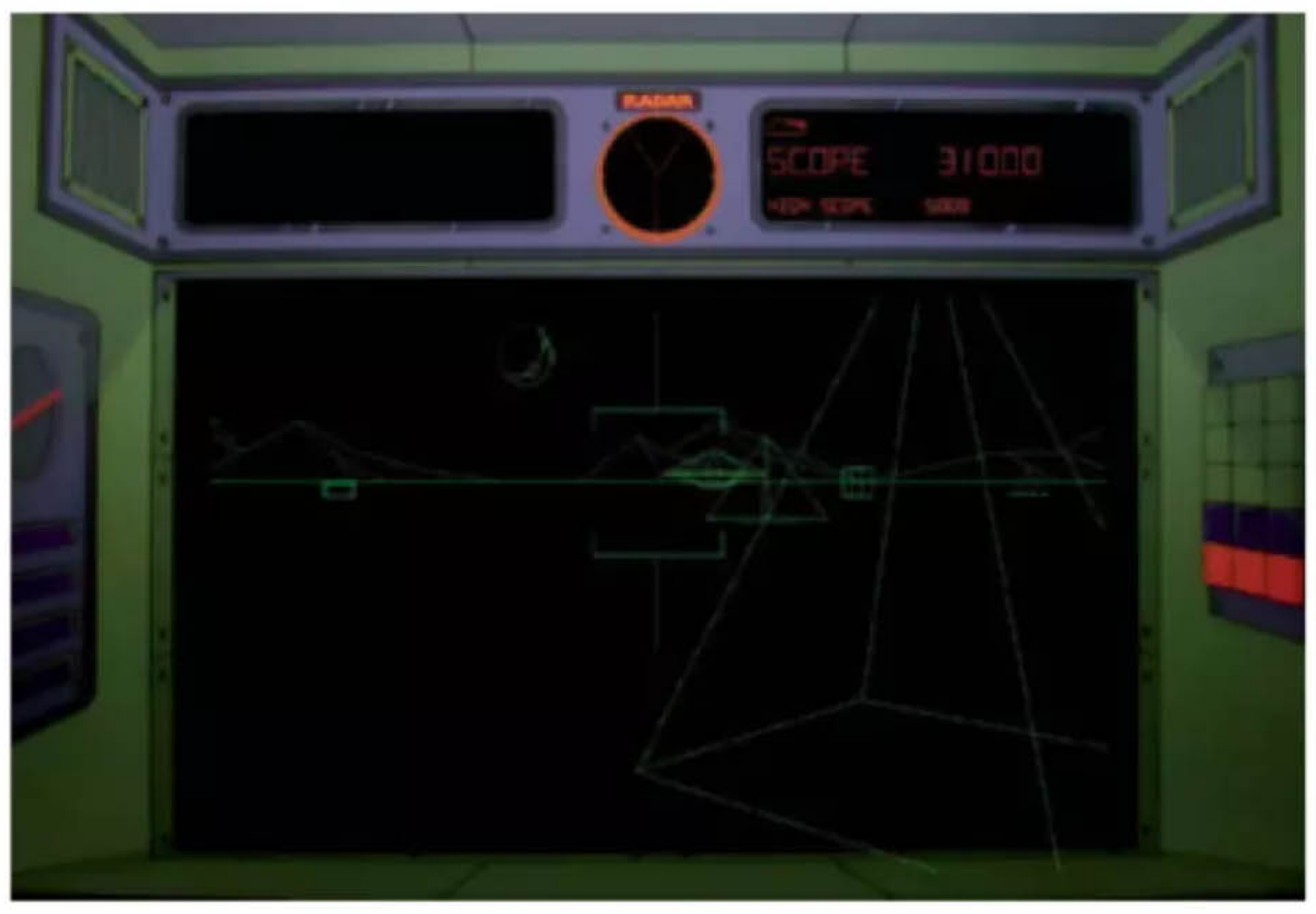
With the team limited by somewhat embryonic technology, Ed's approach to the game was overtly technical, and he was determined to squeeze every drop of power from what was available via a combination of careful planning and tight programming. "Where I started with *Battlezone*, like all my programmes, was deciding how to store the data," remembers Ed. "I knew we needed stationary objects that would have to be described, and since resources were precious, the objects had to be instanced. Hence, I repeated the same shapes throughout the game, merely varying the sizes and positioning."

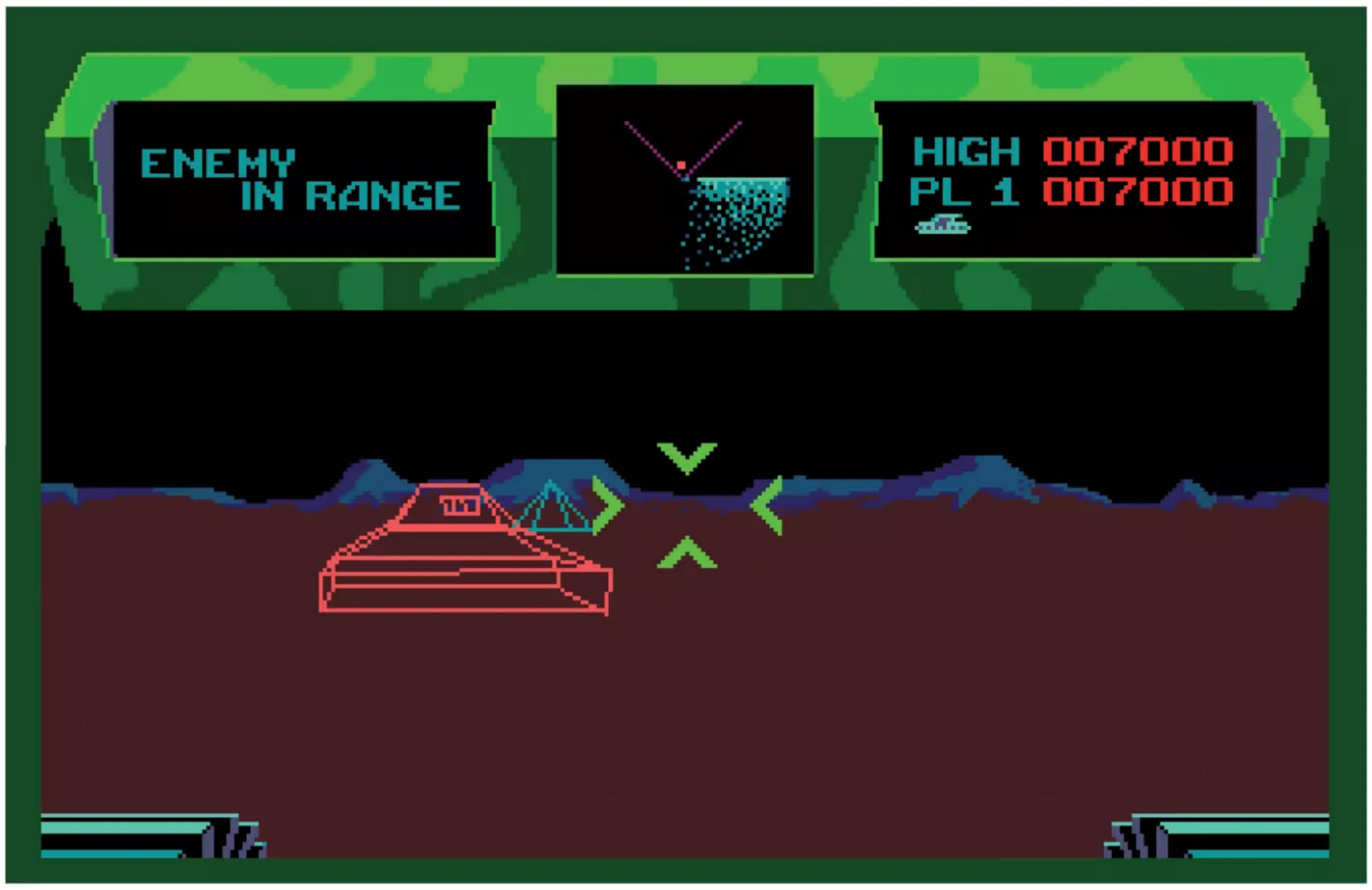
According to Ed, the maths for doing 3D is pretty straightforward, and this was even the case in 1980, so his next task was projecting a view of the world from '0, 0, 0' in the universe on to the screen. "Once I got that and the field of view right, messing with the various parameters and your perspective divide, I started incrementally moving the camera around and putting in controls to enable a player to steer the tank," says Ed, identifying this as the moment he got excited about the game. "It was all theoretical until that point, but once I could drive around the playfield, I knew the math and data structures were working, and I realised it was different – no one had ever done anything like this." Ed says he had no illusions at that point regarding *Battlezone* being in any way enduring, but he knew he had the first of its kind, which "was very cool".

Next, it was just a case of putting a suitable moving object out there, which in this case was the very first tank. "Once I knew I could draw an object, it was a matter of encoding the tank in the data format we were using, storing it, and changing its position and orientation every frame, along with its matrix for rotation," says Ed about the progression. "This is where engineer Jed Margolin was very helpful, in coming up with a way of minimising accumulated error. We were using fixed-point machines back then – you didn't have floating-point – and accumulated error could get out of hand, making everything distort."

IN THE KNOW

- **Publisher:** Atari, Inc
- **Developer:** In-house
- **Platform:** Arcade
- **Year released:** 1980
- **Genre:** Combat simulation
- **Expect to pay:** £500 ($1000+)





DEVELOPER HIGHLIGHTS

S.T.U.N. Runner (PICTURED)
System: Arcade
Year: 1989

Steel Talons
System: Arcade
Year: 1991

Pro Series Golf
System: Nokia-N-Gage
Year: 2008

MPH
500
YOUR
7 BOOSTS
4 KILLS
0 STARS
BEST
7
8
0

By now, Ed notes that others in the department were also getting excited, and were regularly coming in and playing the game. "That's one way you knew you had a game that was gonna be successful," he says. "You walked into your lab and had to kick people off your prototype so you could work on it!" From there, Ed says *Battlezone* was a case of putting all of the pieces together – adding collision detection, building a score system, working on rudimentary AI for the game's enemies, and crafting the various objects and visual components that went into the final version. In terms of the nature of those objects, Ed notes he was limited by the number of vectors the generator could draw and the number of 3D calculations that could be done in each frame. "The idea was to make something that you could recognise and navigate by," he says. "The mountains were easier, since they were just a backdrop, but everything else was a balancing act of what we could get to show without slowing up the frame rate."

> "YOU WALKED INTO YOUR LAB AND HAD TO KICK PEOPLE OFF YOUR PROTOTYPE SO YOU COULD WORK ON IT!"
>
> ED ROTBERG

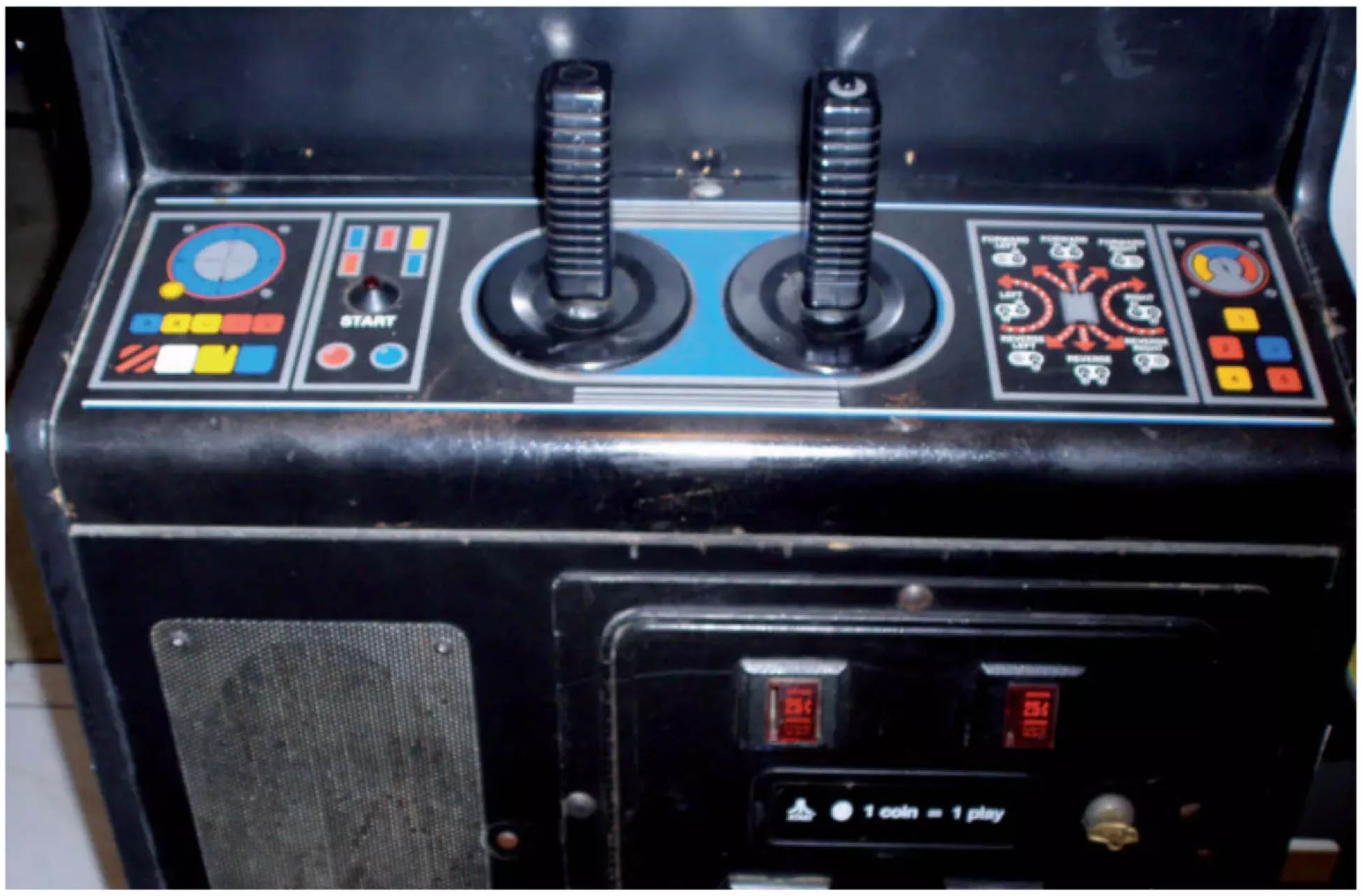
The volcano factor

One exception to the sparsity of the environment is the erupting volcano, which came about due to fellow programmer Owen Rubin constantly hassling Ed during *Battlezone's* gestation. "We worked in the same lab, and every day he'd come in and ask when I was going to make the volcano active," recalls Ed. One day, with Ed working on a particularly nasty problem, Owen asked the question one time too many, and Ed responded that if Owen wanted an active volcano, he should programme it himself. "The next morning, the code was sitting there on my chair, and it took me a half hour to integrate it, and Owen was very happy," says Ed, laughing. "And I never had to touch that code once I put it in – it just worked."

Looking at the game now, the volcano was perhaps the team's sole indulgence – elsewhere, *Battlezone* is tightly honed, to ensure the best gameplay experience for the player. The radar, for example, far from an extravagance, is a necessity in such a 3D environment – as Ed notes: "Put someone in our 3D world and they can't turn their head – only ponderously turn the tank – and so they needed to be able to locate enemies, to immediately react and do something about them." Regarding the enemies, Ed designed a fairly linear progression, starting with a standard tank that he terms "the learning level, where you figure out how to shoot". With that being fairly easy, a saucer was then introduced. "This is a high-point target, but go after it and you'll be distracted from the tank, which makes the game harder," explains Ed. For some variety and added toughness, an unsympathetic super tank was also added to the mix, along with a missile.

Of the enemies found in *Battlezone*, it's easily the iconic missile Ed remembers most fondly. "The missile was interesting because it was the only thing that moved in the vertical dimension, other than the pieces that flew around after something exploded," he says. "I really liked the way it turned out – while there's this pseudo-random motion of zigzagging that a missile takes towards you, after a while you sort of anticipate when it's going to turn and where you need to fire – there's a Zen-like quality to fighting the missiles that was really very different to anything I'd seen in videogames to that point."

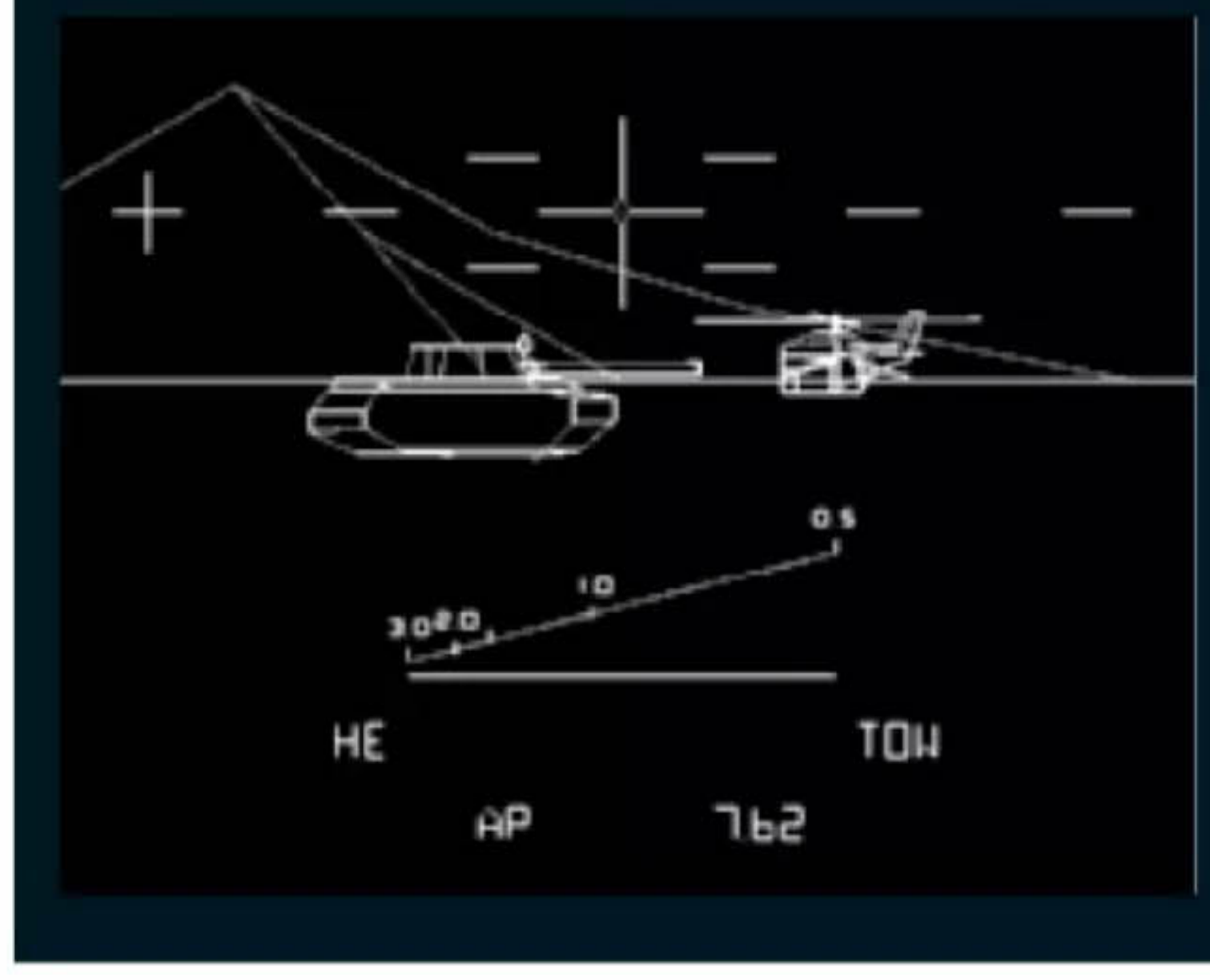
» *Battlezone* utilised a unique two-stick control system, with each stick controlling one of the tank's treads.

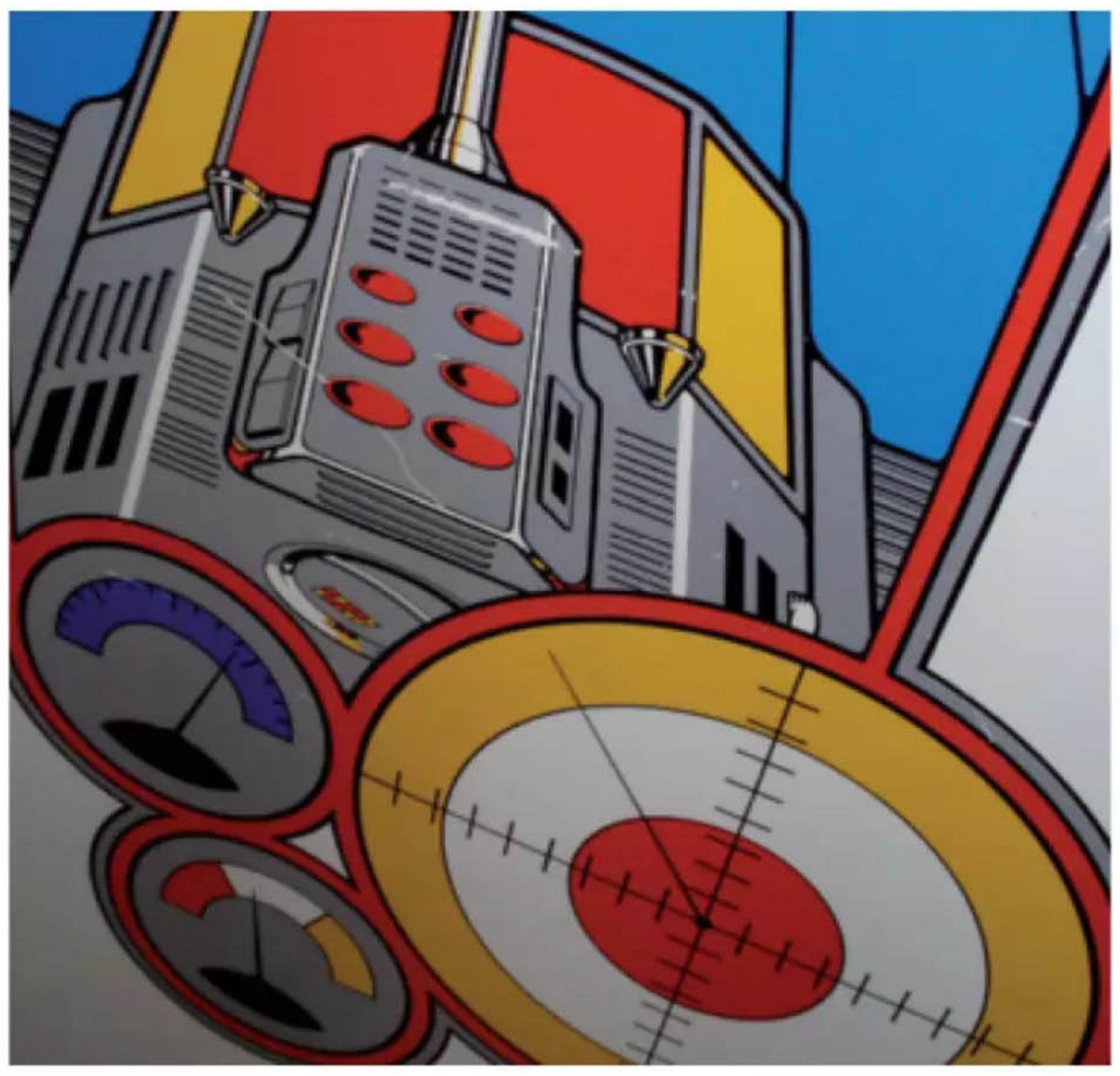


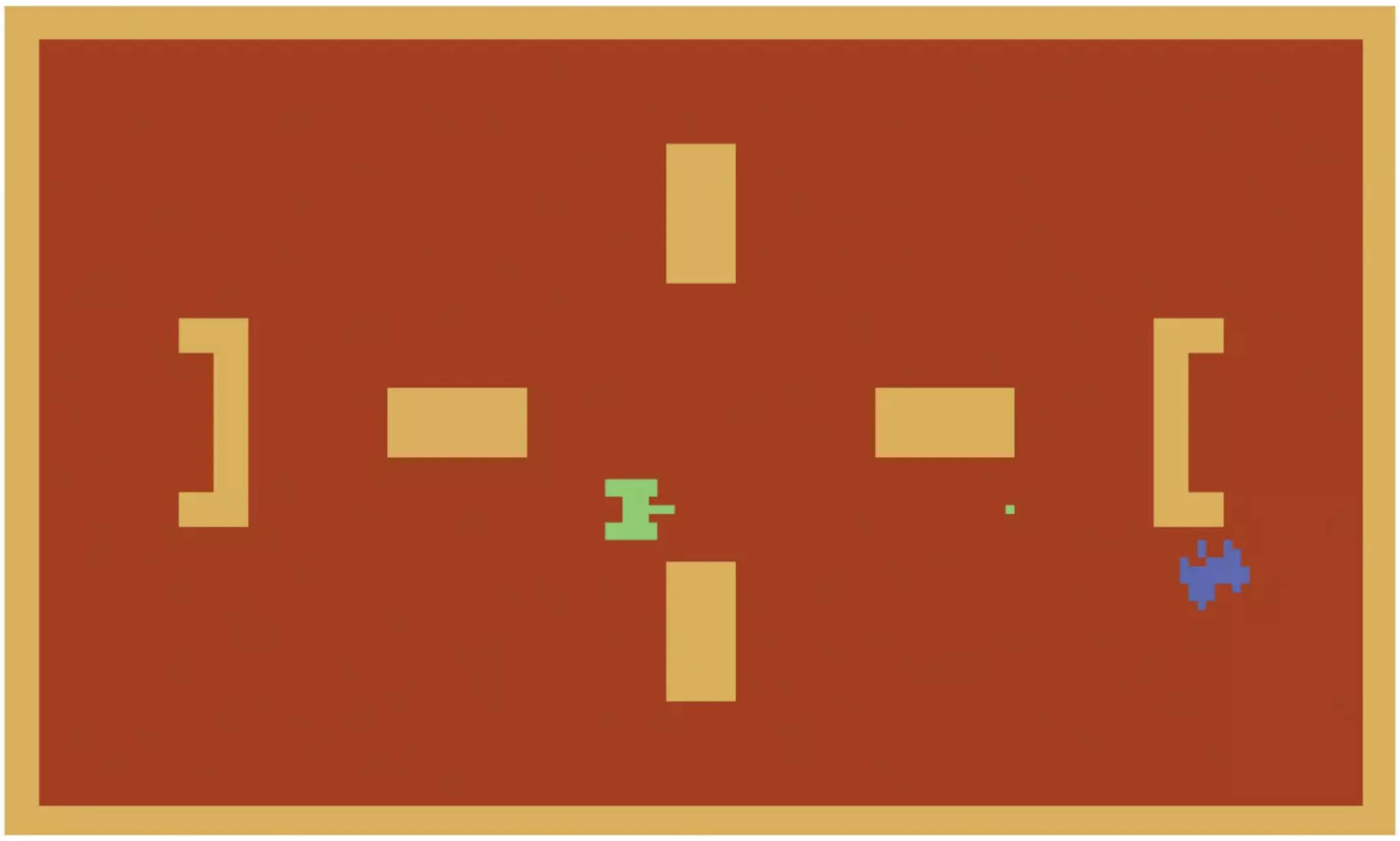
CONVERSION CAPERS

Although technology evolved at speed in the Eighties, *Battlezone* was beyond home systems for many years. "I was working with custom hardware and controllers, and the guys converting *Battlezone* had generic systems that weren't powerful enough," says Ed. "They couldn't possibly do all the 3D graphics calculations, and they didn't have the resolution to do the kind of drawing we did on the vector generator."

Despite the evident challenge, some memorable conversions were made, with variable levels of authenticity. On the VIC-20, speed and resolution were sacrificed, but the display somewhat resembled the original. On the VCS, vectors were ditched entirely, in favour of a fast, raster-based effort. "It was like paraphrasing – there's no way these games could quote Battlezone, but they could paraphrase it, and so that's what they did," considers Ed. "I had no problem with that, because I was aware of the technical hurdles."







» Games like the excellent *Combat* and its arcade-based forebears directly influenced *Battlezone*, which took the concept into 3D.

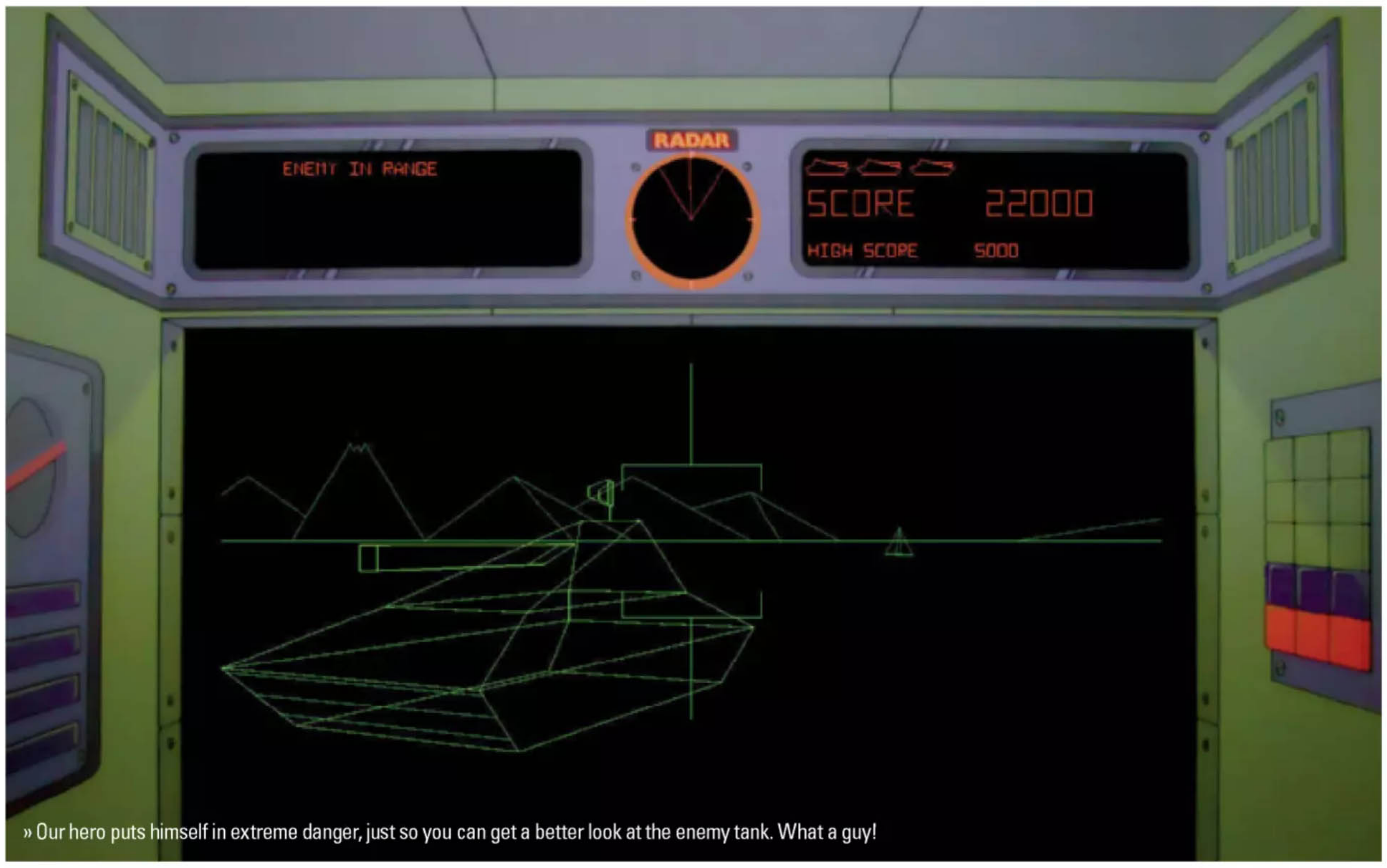
Of course, with classic Atari releases, the game was only a small part of the puzzle – the company had a penchant for crafting unique cabinets with suitably distinct controls. In the case of *Battlezone*, two sticks were provided, driving each of the virtual tank's tracks. The reason for this choice, according to Ed, was simple. "We said, well, a tank's got two treads and that's how they turn." Budgetary restrictions limited the treads to a single speed, but this made the controls easy to learn, and various stick positions provided a diverse array of movement, enabling your tank to turn in place, and move in whatever directions where needed.

Early versions of the cabinet also included a viewfinder for the player to peer through. "The idea was to make the game more immersive," says Ed. "I don't think it really worked, though, because it was uncomfortable." Ed also notes that this component caused other problems, notably people being unable to see the game when walking by it or when it was being played. "Atari added panels to the side so people could watch, but when it came time to take home a prototype, I took a cab without a viewfinder, because I hated it – and that's what I have to this day," remarks Ed, noting that a combination of cost reductions and earnings indications regarding potential punters being able to see attract screens led to later units dispensing with the viewfinder entirely.

The final shot

With about 15,000 units produced, *Battlezone* was a hit, and various conversions, remakes and *Battlezone*-inspired efforts peppered the market for years, ensuring the original game's legacy. We ask Ed whether in hindsight he's happy with the game he largely created, and if other ideas would have made the cut had he not been up against typically tight deadlines. "There are always things you want to include but can't, or things you'd like to improve," he considers, remembering a particularly irksome high-score bug that the team never managed to shake. "From the gameplay side, there

> "ONE WAY YOU KNEW YOU HAD A GAME THAT WAS GONNA BE SUCCESSFUL WAS WHEN YOU WALKED INTO YOUR LAB AND HAD TO KICK PEOPLE OFF YOUR PROTOTYPE SO YOU COULD WORK ON IT"
>
> ED ROTBERG ON BATTLEZONE'S POPULARITY, EVEN DURING DEVELOPMENT

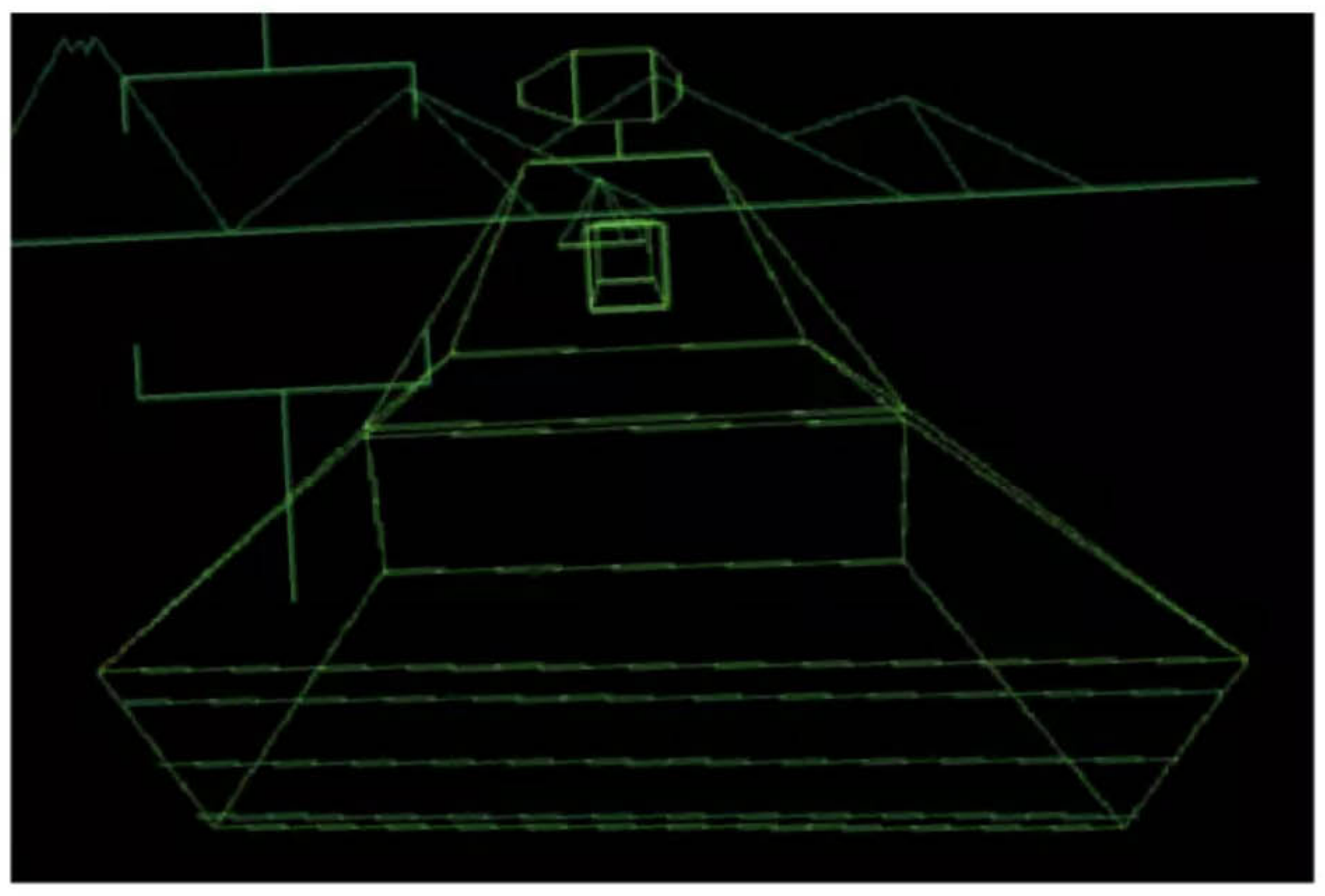


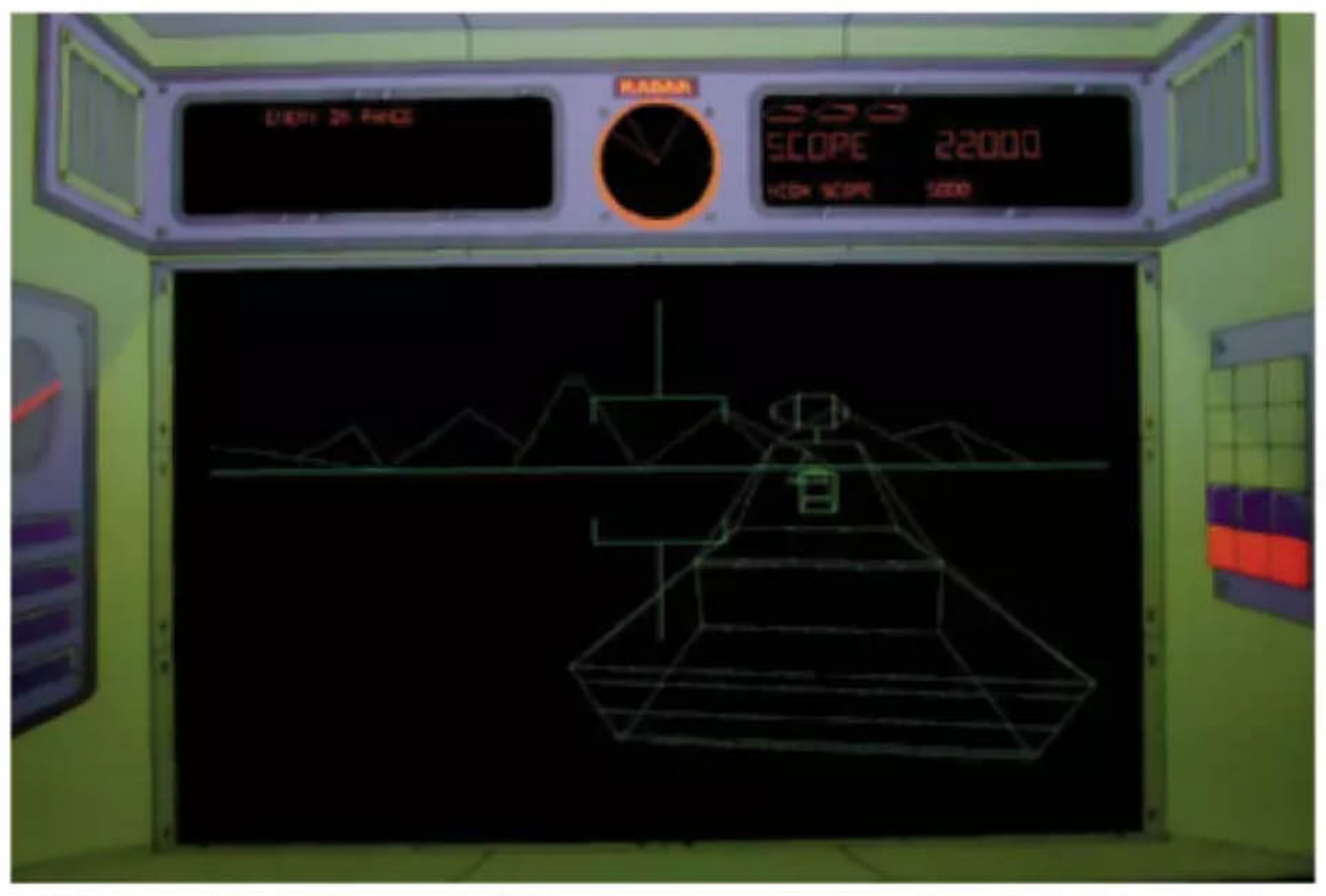
» Our hero puts himself in extreme danger, just so you can get a better look at the enemy tank. What a guy!

WAR ZONE

A surprising offshoot of *Battlezone* was Bradley Trainer, a version designed for the US Army. "A group of retired generals saw Battlezone and thought we could come up with a training device for one of their vehicles. They got in touch with Rick Moncrief, who was gung-ho about the idea and promised a prototype in a very short amount of time," grumbles Ed, who, as a member of the 'peace generation', was anti-war and against creating something that indirectly could be used to train people to kill.

"Unfortunately, no one else had familiarity with the platform or code, and so I lost three months of my life working 16-hour days to put the thing together, under condition that if Atari decided to pursue this avenue, I'd be exempt from further work on it," recalls Ed. Ultimately, Atari decided it wasn't a great business to get into, although some good unintentionally came of it. Ed explains: "The controller created for Bradley Trainer ended up being used in numerous other games, starting with *Star Wars*, so in that regard I guess it was a good thing!"





» Want a quick *Battlezone* tip: letting tanks get this close, in order to take a neat screen grab, leads to almost immediate death.

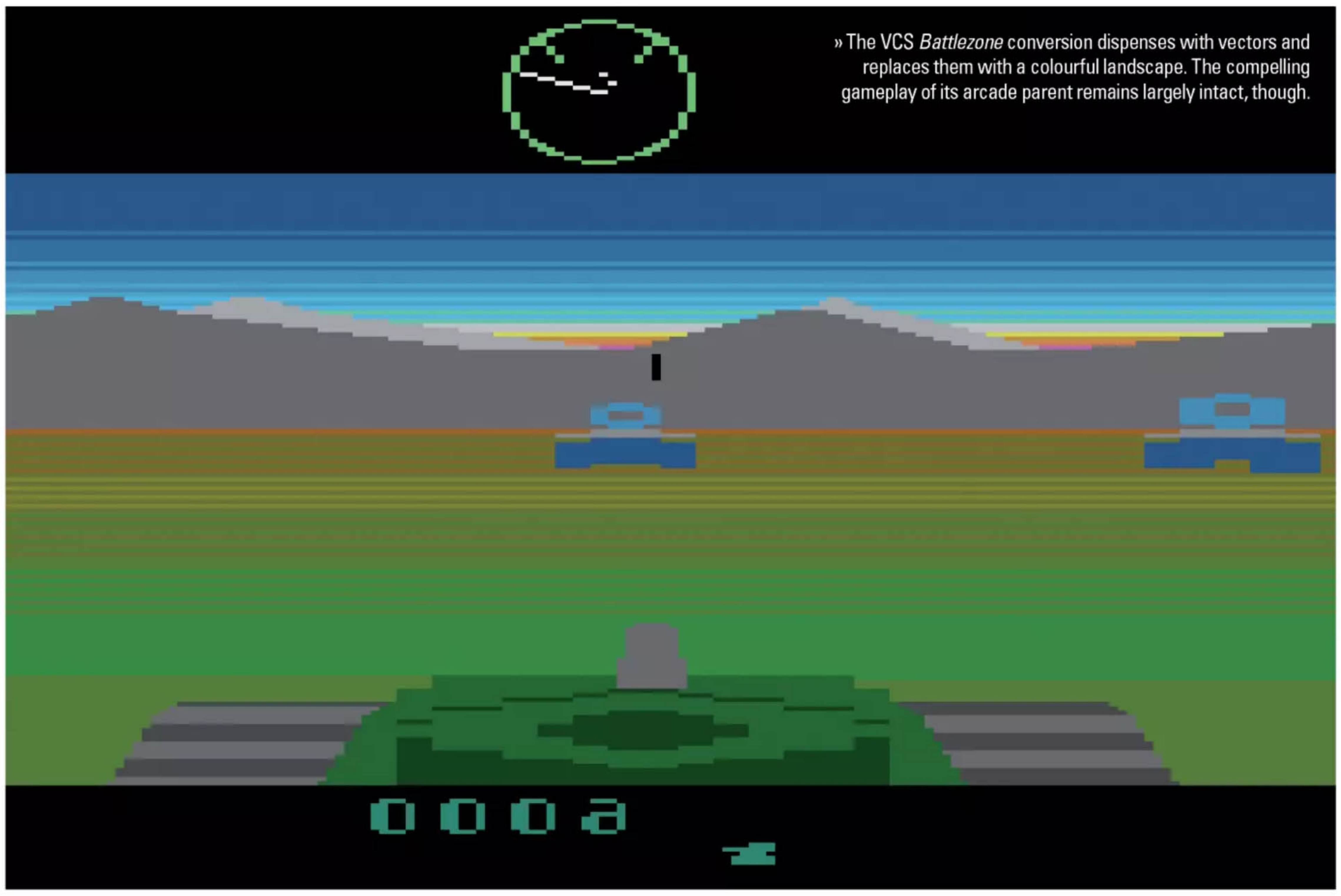
were people who'd get really into playing for a long time, and we came up with ideas for increasing the urgency and decreasing the game time."

Had these ideas been implemented, *Battlezone* may have had an additional and particularly savage foe. "We talked about having launch tubes on the playfield, which you'd get a warning about and have to reach before they launched a missile," says Ed. "But unlike the standard missiles, these would come and kill you from above, where you had no defence at all. So you'd be dealing with those, super tanks and the other missiles at the same time." Mercifully, the original intent was for these devious missiles to only make an appearance far later in the actual game.

While on the subject of extra components, we ask whether there was ever any truth in the various *Battlezone* rumours, such as the rumoured concepts for reaching the volcano or discovering a tank factory spewing out enemy tanks. "No, the background was strictly a background – it rotated and was at infinity, quite literally," says Ed, adding that there were never any plans for it to be otherwise. "We got all kinds of letters from people asking about this, or claiming their friends got to the volcano once. But the playfield wrapped around – 16-bits in either direction and then you were back at zero!"

As the interview draws to a close it's becomes very clear to us that Ed has a lot of affection for his near-30-year-old creation. He still talks about *Battlezone* with proudness and enthusiasm, like it's an exciting new creation, and we ask whether the game was a particularly good title to work on. "It was a great game to work on," Ed confirms. "I got to use stuff I learned in college that had lain dormant until then. I also felt Battlezone was groundbreaking, and it's always a really cool feeling when you know you're doing something no one has seen before."

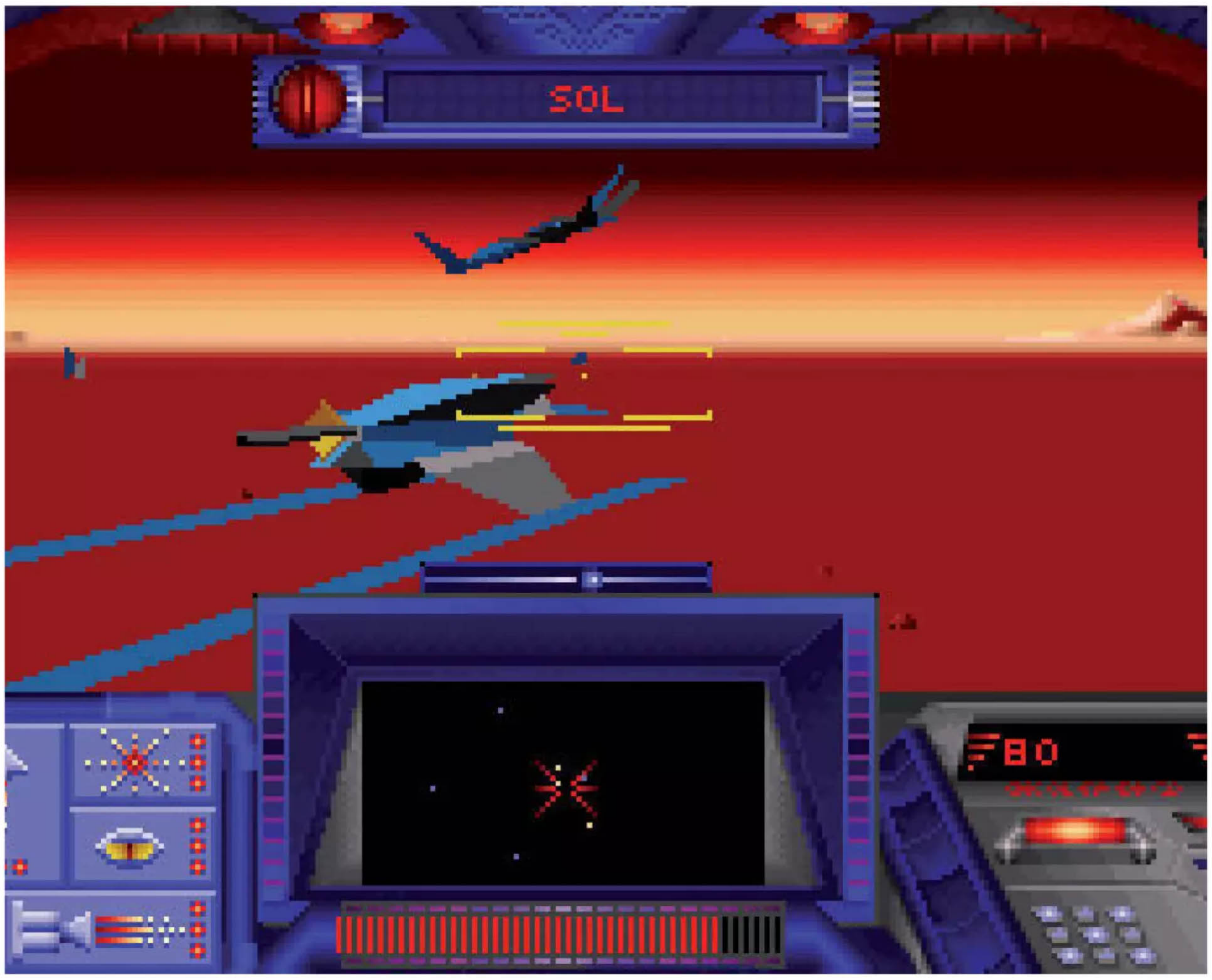
Special thanks to Frederic Delaire (www.arcadefever.net)



» The VCS *Battlezone* conversion dispenses with vectors and replaces them with a colourful landscape. The compelling gameplay of its arcade parent remains largely intact, though.

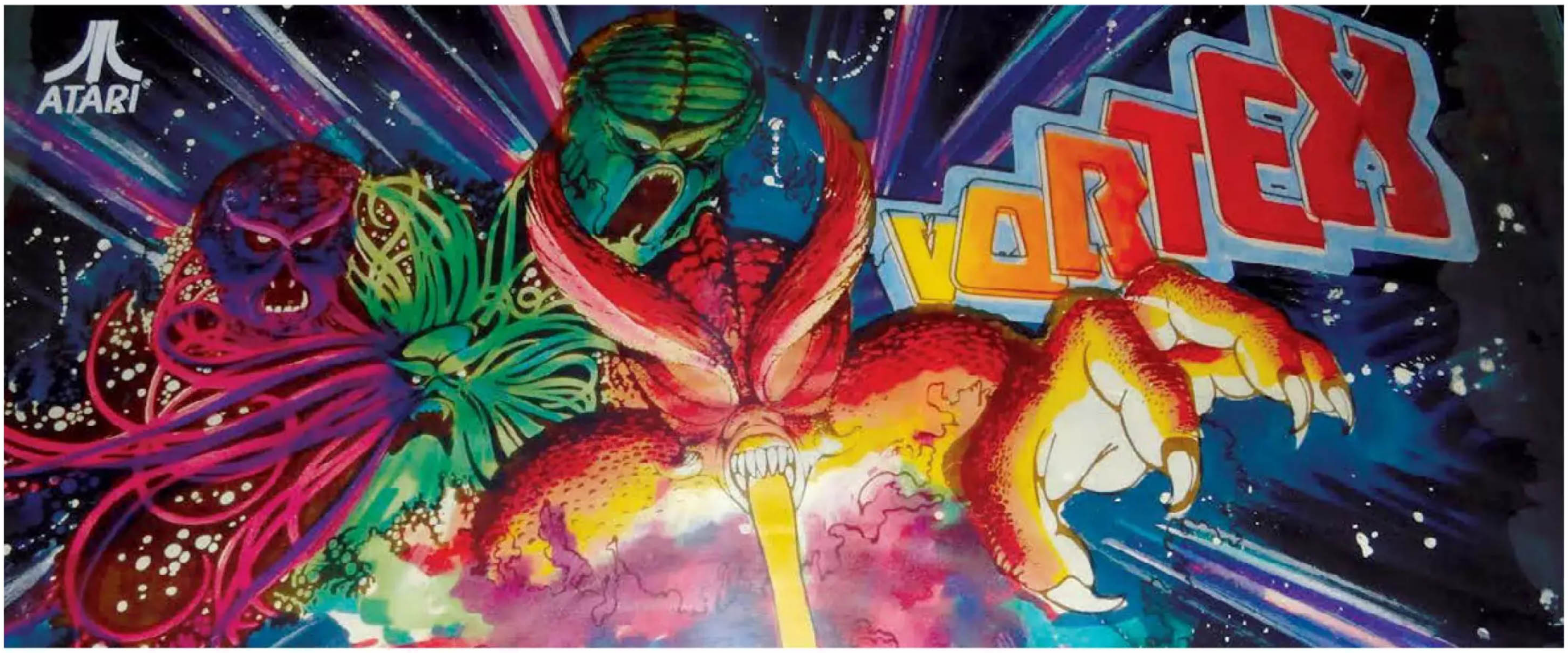
> "PEOPLE CLAIMED THEIR FRIENDS GOT TO THE VOLCANO, BUT THE PLAYFIELD WRAPPED AROUND – 16-BITS IN EITHER DIRECTION AND YOU WERE BACK TO ZERO"
>
> ED ROTBERG ON PEOPLE BEING ABLE TO ACHIEVE THE IMPOSSIBLE

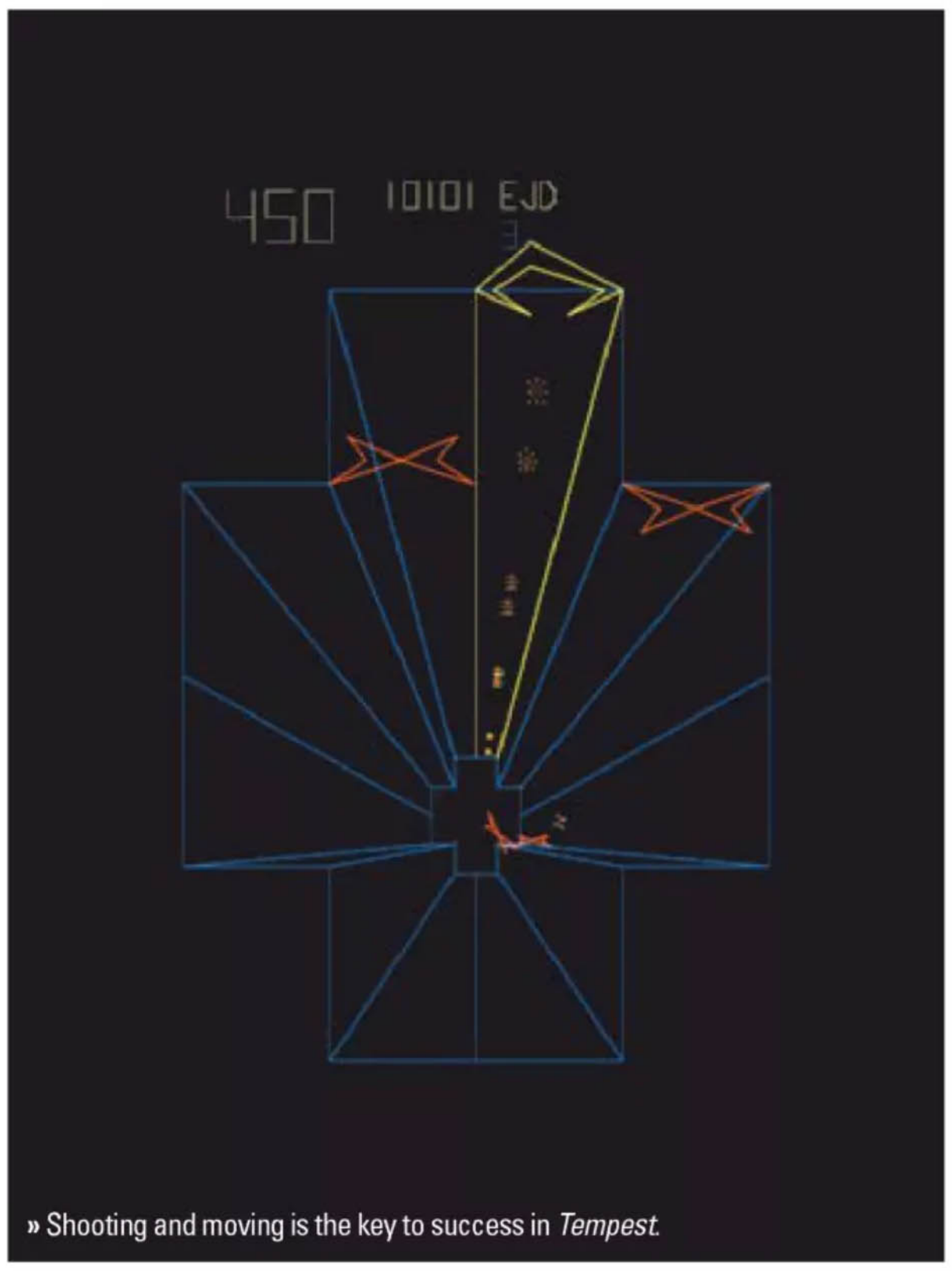
» *Stellar 7*, which was released on a number of different formats, takes the basic premise of *Battlezone* and surrounds it in a mission-based wrapper.



THE MAKING OF TEMPEST

ATARI'S FIRST COLOUR VECTOR GAME WAS AN ADVENTUROUS, ABSTRACT SHOOTER THAT TOOK ARCADES BY STORM AT THE BEGINNING OF THE EIGHTIES. TEMPEST CREATOR DAVE THEURER TAKES PAUL DRURY FOR A SPIN


ATARI
VORTEX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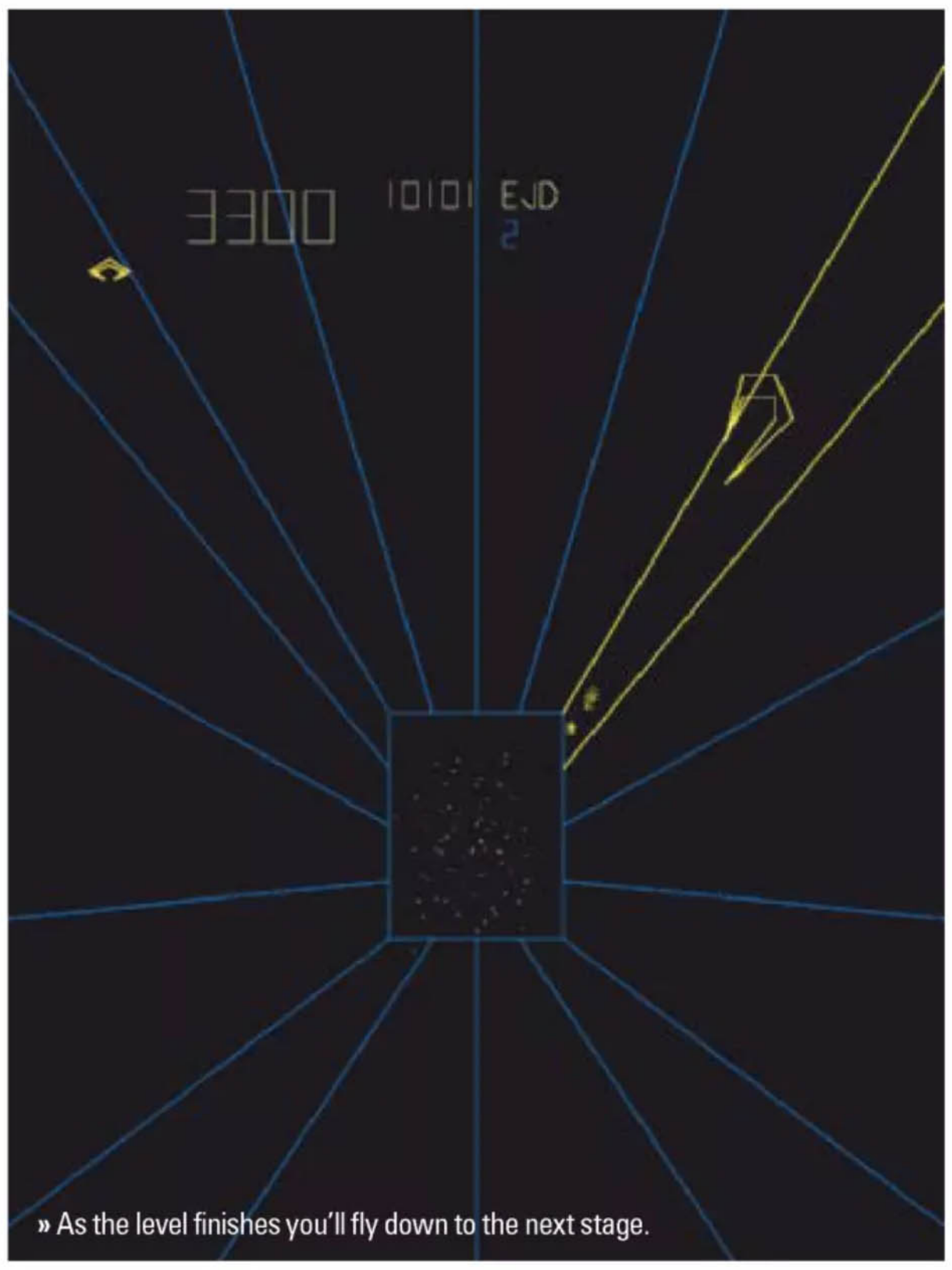
» Shooting and moving is the key to success in *Tempest.*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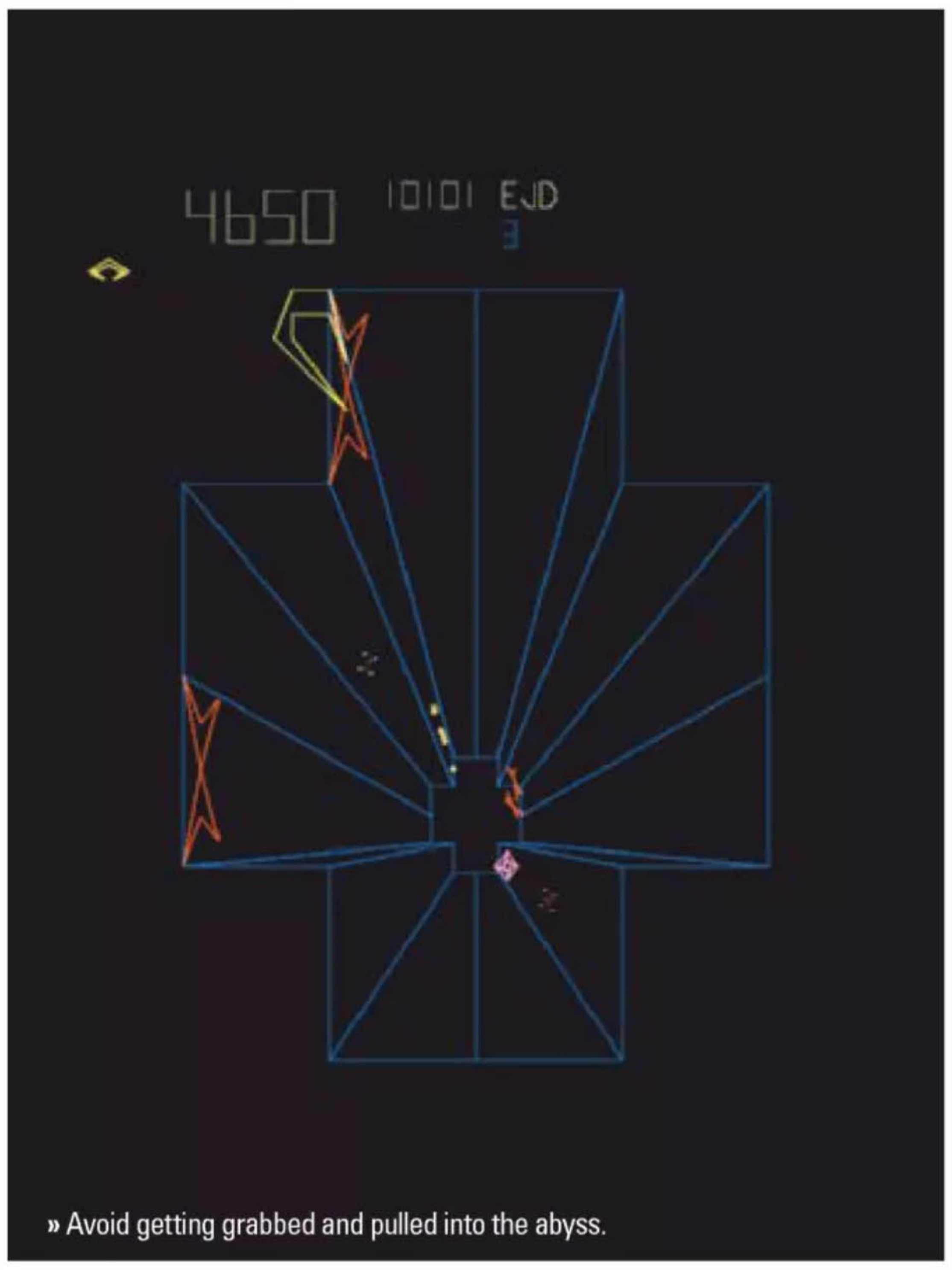
» As the level finishes you'll fly down to the next stage.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10101 EJD

» Avoid getting grabbed and pulled into the abyss.

Would a game by any other name play as sweet? "The prototype *Tempest* machine was called Vortex," explains Dave Theurer, the man behind the seminal shooter, "but some players joked about how it sounded like a feminine hygiene product – Tampax! We decided it had to be changed…"

Thus Atari's colour vector debut was given a title that suggested a swirling maelstrom rather than period pains or, indeed, a toilet cleaner. Atari's *Tempest*, an utterly compelling blaster that threw players headlong into the action, was Dave's third game for the company. His coding career at Atari had first begun in 1979 with the four-player version of *Atari Soccer*, and the following year he created his second trackball-based title, the mighty and massively popular *Missile Command*. Where that game had tapped into the Cold War era's palpable fear of nuclear devastation, his next project also intended to play on something significant in the popular consciousness of the day: Taito's Space Invaders. "I loved that game," beams Dave. "When it first came out, we got a unit in our labs and I played it a lot. As soon as I'd wrapped things up on *Missile Command*, I wanted to take a shot at 'first-person' Space Invaders." Management gave Dave the go-ahead for this re-imagining of the arcade industry's first global hit. Initially working with black-and-white vectors, before moving the project over to the new colour vector hardware, he produced a playable version, with rows of angry aliens plodding towards your ship. Successfully creating a convincing sense of 3D was of course encouraging, but Dave soon realised that he had a far bigger problem that he had to solve.

"It just wasn't much fun," he concedes. "Gene Lipkin, the head guy at Atari at the time, came into our lab for the first review, played it, and just said, 'ho-hum'. It was interesting to look at but I think the structure was a bit too loose. Having enemies come at you in 3D without enough reference points to accurately gauge where they were in the 3D space made it difficult to aim and to position your ship." It was time for a major rethink, but rather than look to the arcades for inspiration, Dave turned to his subconscious. He recalled a strange, recurring dream from his childhood, involving monsters creeping up from a deep, dark pit in the ground. His supervisor, Steve Calfee, liked the idea and asked Dave to produce something. With renewed vigour, he set to work turning the vague concept in his mind into a prototype game design that could take advantage of Atari's new technology. "I was totally excited," he enthuses. "It was colour. It was 3D. It was fast. It was new! The colour vector hardware could do things on screen never done before."

Working in this brave new world was invigorating but not without its challenges. The technology was still being developed alongside Dave's monster shooter, and while the hardware never actually ignited, problems with the deflection amps could lead to frustrating monitor malfunctions… or worse. "Working with the prototype colour vector display was risky: if you parked the beam off the screen for too long, it would burn a hole in the phosphor coating on the screen!"

> "BLASTING DOWN THE PLAYING FIELD AT THE END OF A WAVE AND THEN THE COOL FEELING OF LIFTING OFF THE BOTTOM OF THE PLATFORM INTO SPACE IS EXHILARATING"
>
> DAVE THEURER

DEVELOPER HIGHLIGHTS

Missile command
System: Arcade
Year: 1980

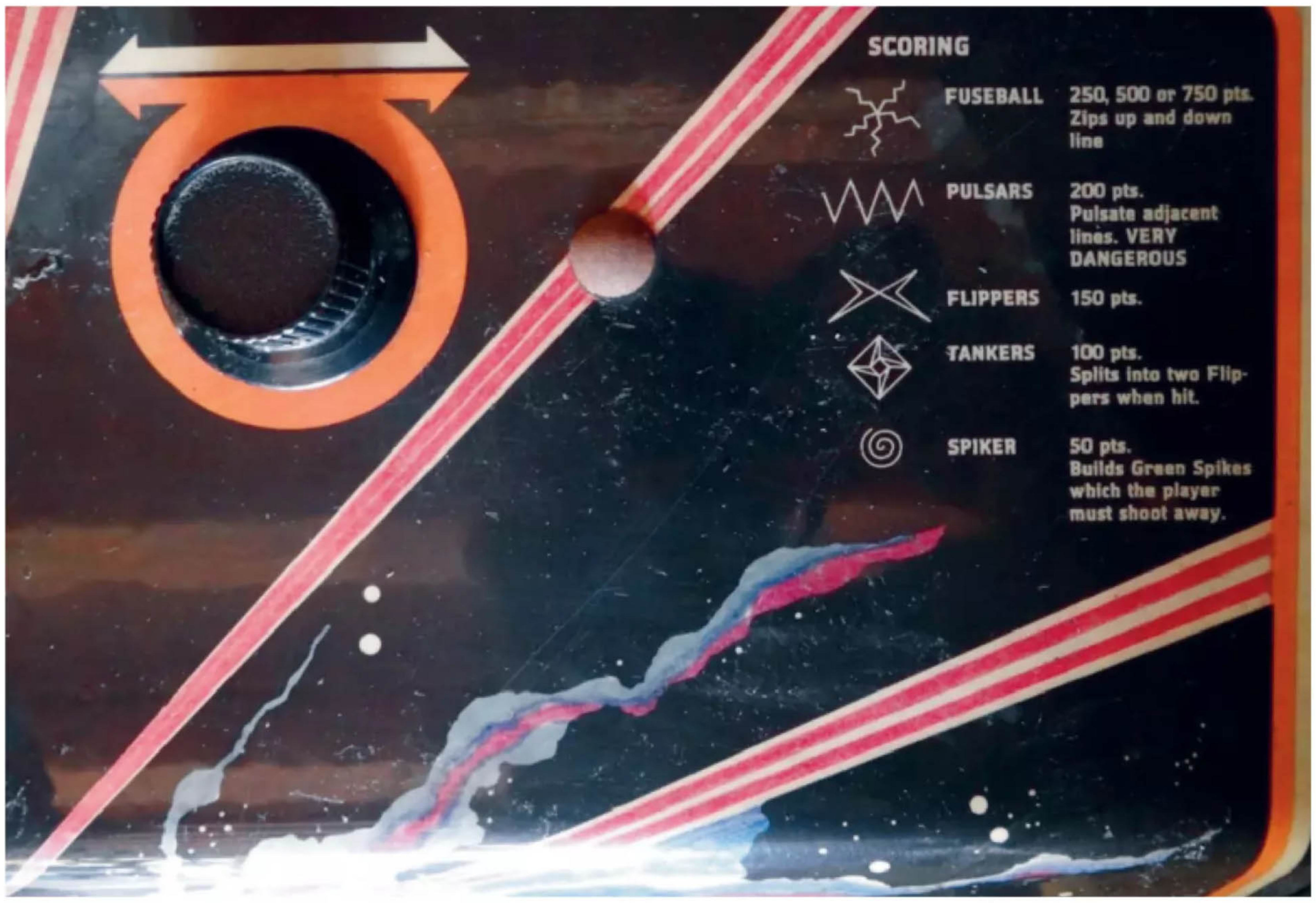
i, Robot (PICTURED)
System: Arcade
Year: 1983

APB
System: Arcade
Year: 1987

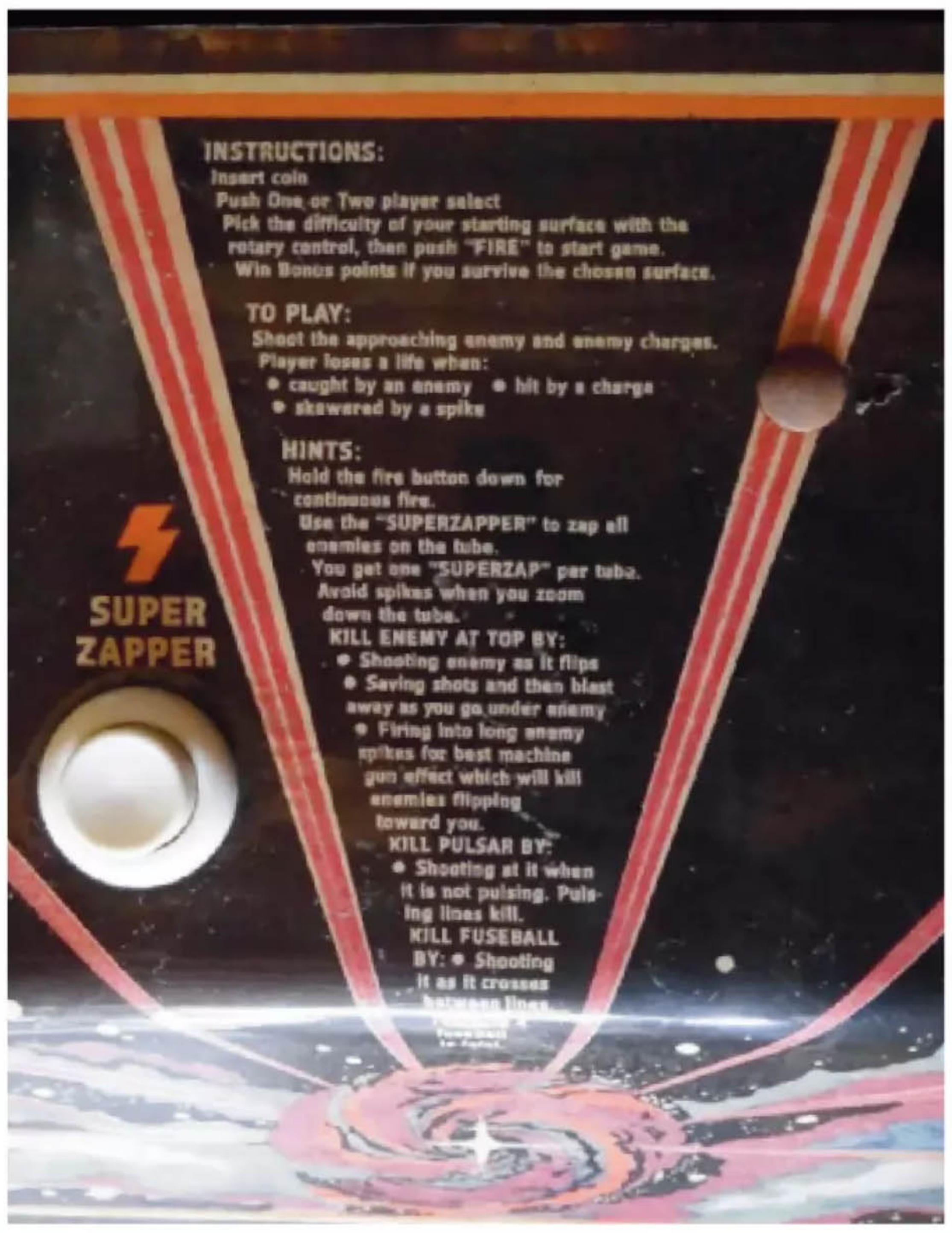
48
TIMER 3888
BEST 2900
LEVEL 3

IN THE KNOW

- **Publisher:** Atari, Inc
- **Developer:** In-house
- **Year released:** 1980
- **Platform:** Arcade
- **Genre:** Shoot-'em-up
- **Expect to pay:** £500 ($1000+)


SCORING
FUSEBALL 250, 500 or 750 pts. Zips up and down line
PULSARS 200 pts. Pulsate adjacent lines. VERY DANGEROUS
FLIPPERS 150 pts.
TANKERS 100 pts. Splits into two Flippers when hit.
SPIKER 50 pts. Builds Green Spikes which the player must shoot away.

» The control setup from the *Vortex* prototype, which currently resides in Dave's basement.


INSTRUCTIONS:
Insert coin
Push One or Two player select
Pick the difficulty of your starting surface with the rotary control, then push "FIRE" to start game.
Win Bonus points if you survive the chosen surface.
TO PLAY:
Shoot the approaching enemy and enemy charges.
Player loses a life when:
• caught by an enemy • hit by a charge
• skewered by a spike
HINTS:
Hold the fire button down for continuous fire.
Use the "SUPERZAPPER" to zap all enemies on the tube.
You get one "SUPERZAP" per tube.
Avoid spikes when you zoom down the tube.
KILL ENEMY AT TOP BY:
• Shooting enemy as it flips
• Saving shots and then blast away as you go under enemy
• Firing into long enemy spikes for best machine gun effect which will kill enemies flipping toward you.
KILL PULSAR BY:
• Shooting at it when it is not pulsing. Pulsing lines kill.
KILL FUSEBALL BY: • Shooting it as it crosses between lines
SUPER ZAPPER

If at first you don't succeed…

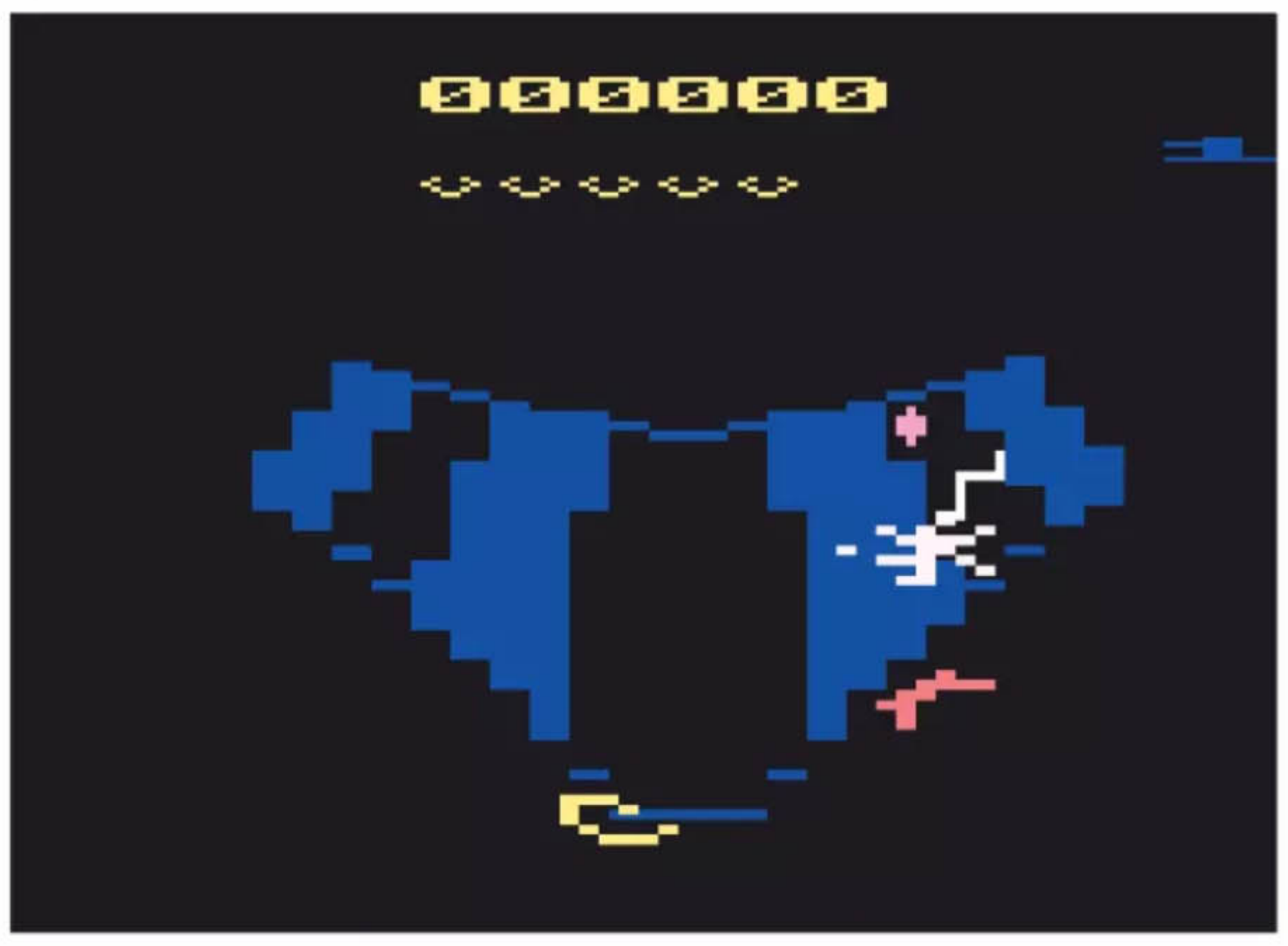
Undeterred, Dave set about designing his cutting-edge project in a charmingly old-school fashion. "Everything – enemy objects, the player object, surfaces and so on – was drawn on square grid graph paper first, because there was no appropriate design tool at the time for this type of graphics," he explains about the early months of his iconic game. "There were lots of surface designs, enemies and player objects that we tried and rejected."Those that made it through were indeed an odd, unearthly bunch. Multicoloured Fuseballs dancing skittishly inside the abyss, deadly Pulsars crackling with electricity, and the hordes of Flippers, which skipped like spiders across the web-like levels, created a surreal swarm of adversaries. In fact, the way your blaster crawled along the outer edge of each of the 16 differently shaped holes from which these horrors emerged had a certain insect-like quality, which belied the game's abstract appearance.

"That was incidental," says Dave. "The goal with the player object was to create something that would change as you moved to show you exactly how you were moving, when you'd transition to the next position, and where, exactly, you were in relation to the grid. It needed a body and legs, and it all came together after many, many attempts."

The game was indeed coming together. By ensuring the enemies were 'stuck' to the surface of each hole and the player ship was restricted to movement along a defined surface, it was far easier for players to sense where they and their foes were in the three-dimensional space, thus overcoming the awkwardness of the initial 'first-person *Space Invaders*' concept. The player experience was further enhanced by another key decision: to use a 'spinner' controller rather than a traditional joystick.

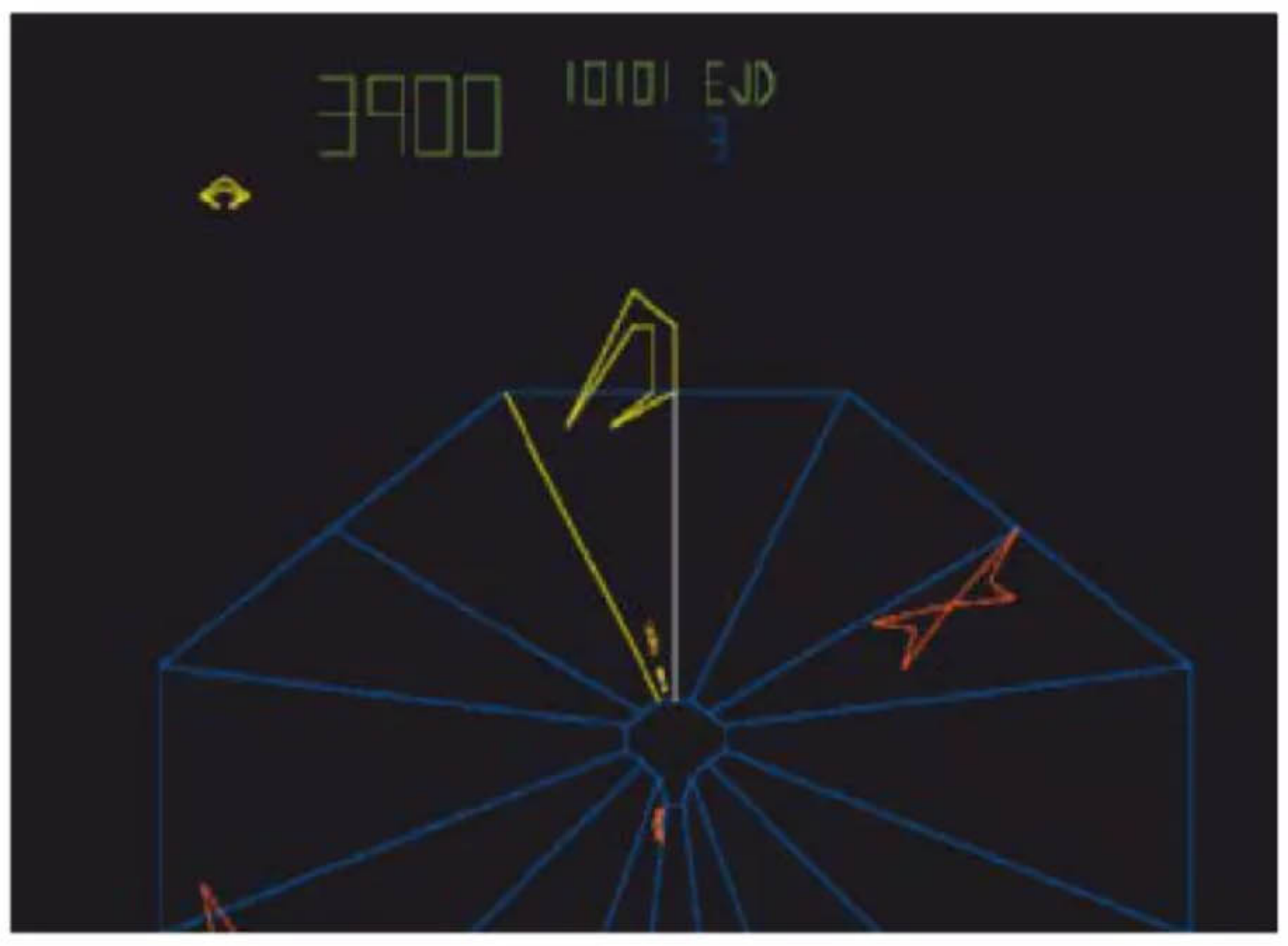
"The controller has a fabulous feel when you spin it," agrees Dave about the iconic device. "Just the right amount of resistance and just the right amount of angular momentum when you stop applying the force. I know we didn't have it with the *Space Invaders* game, because that was motion left and right on a semi-flat surface. We must have switched to this controller when we changed to the *Tempest* gameplay, with the

CONVERSION CAPERS



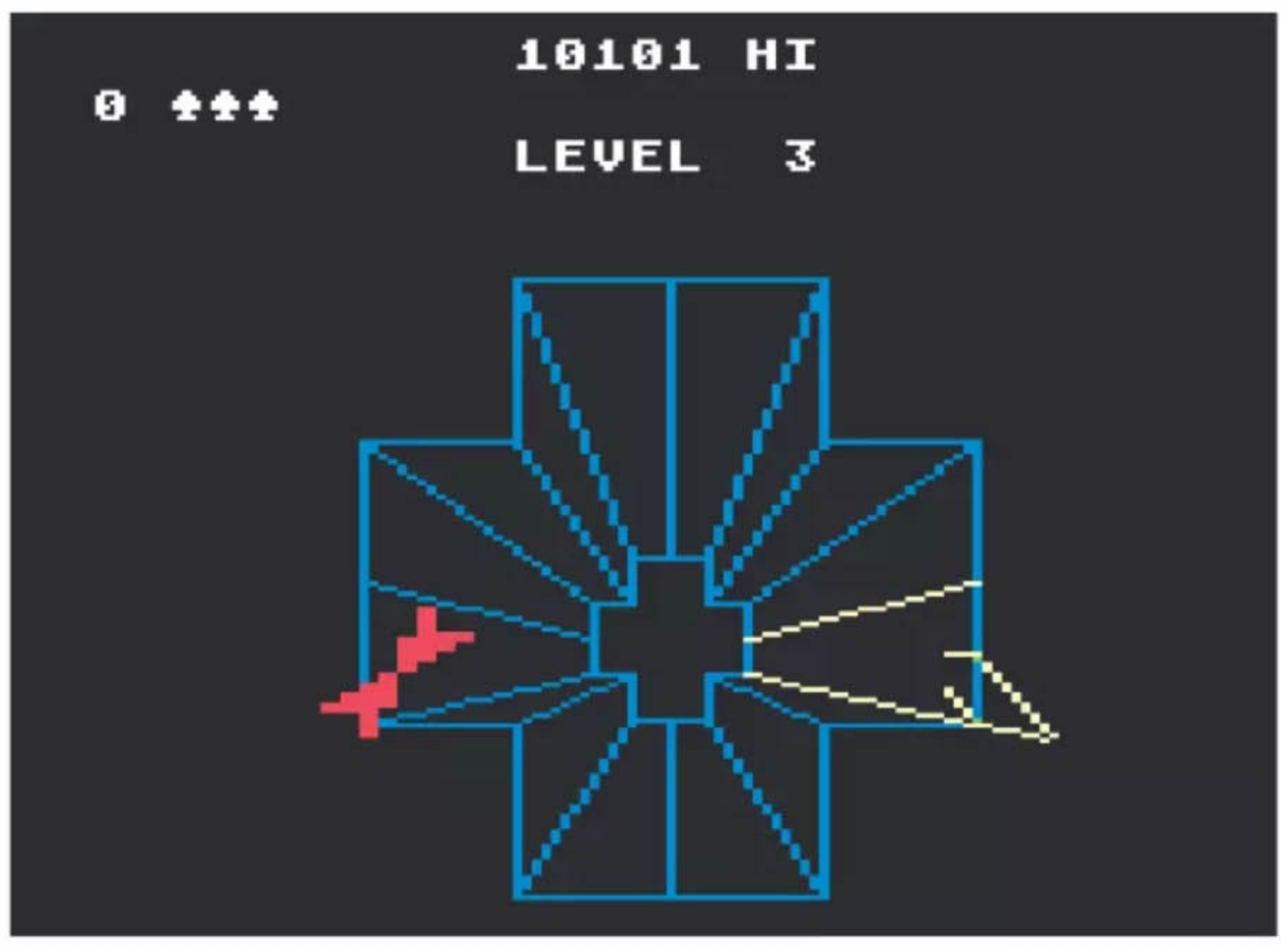
ATARI 2600

Attempting to re-create 3D vector graphics on the VCS was naive, so no surprise that this fails miserably. The tubes become a mess, aliens bulge awkwardly out of the confusion, and bullets flicker in and out of visibility.



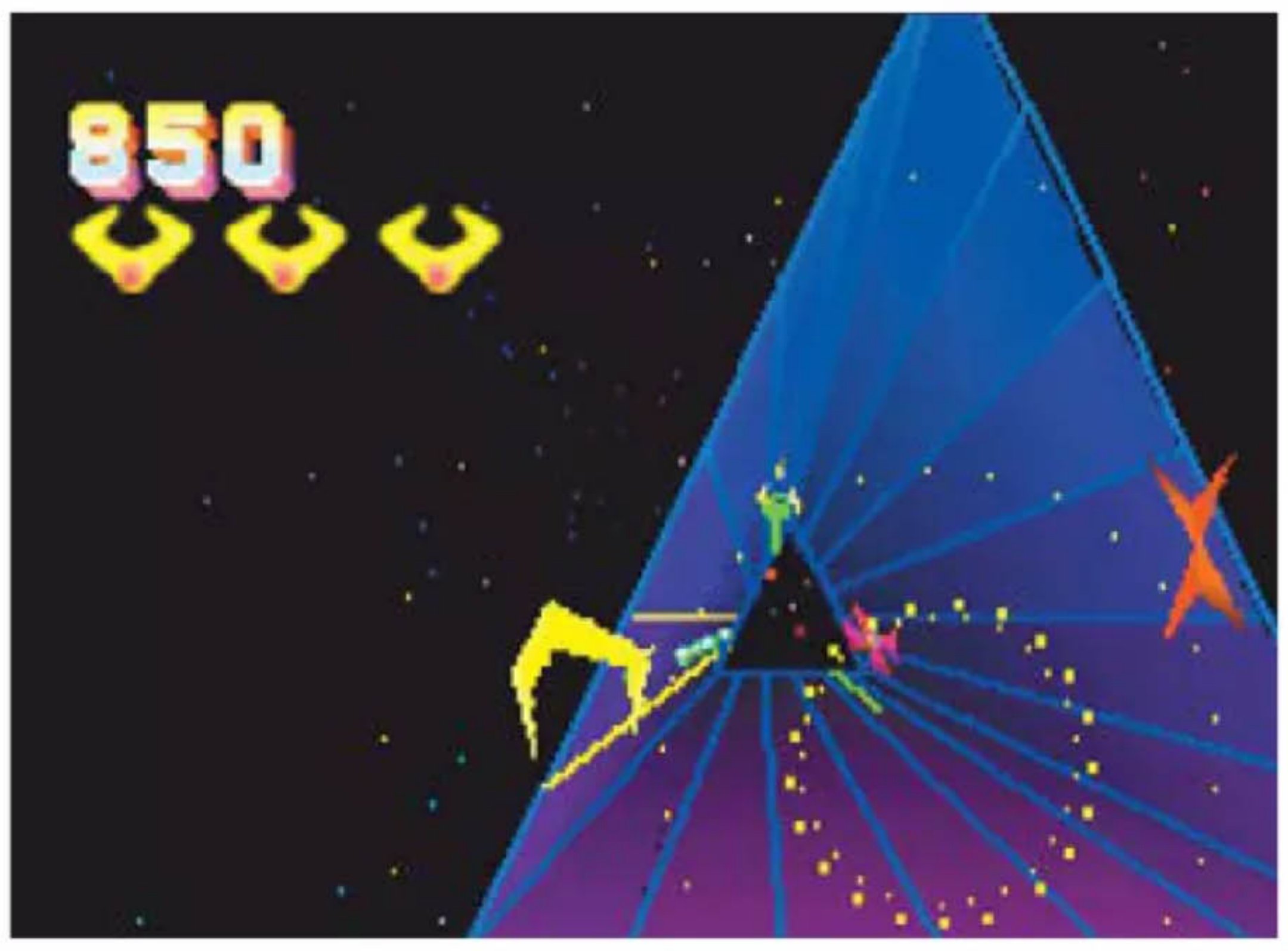
TEMPEST TUBES

Not a home version as such, though it did eventually appear on the *Atari Arcade Hits: Volume 1* PC compilation in 1999, but rather an interesting hack by Duncan Brown.



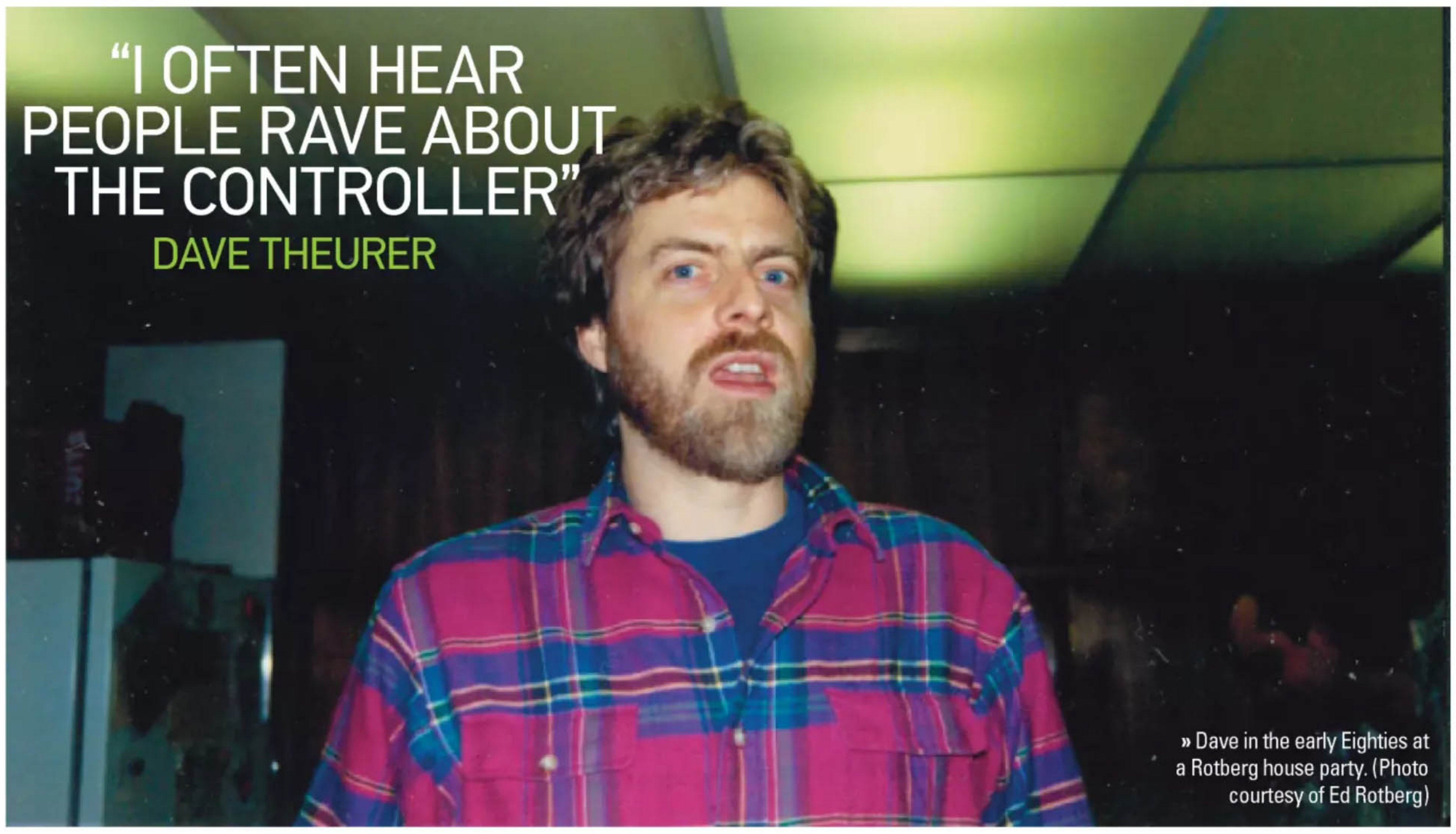
ATARI 5200

A boxed version of the game can be spotted in the film *Cloak & Dagger*, but this remained unreleased until a prototype version finally surfaced in 1998. The game looked very promising, visually and play-wise.



TEMPEST 2000

Jeff Minter had been a huge fan of *Tempest* since discovering it in a Piccadilly Circus arcade in the early Eighties. He jumped at the chance of revisiting the game for the Jaguar a decade later.

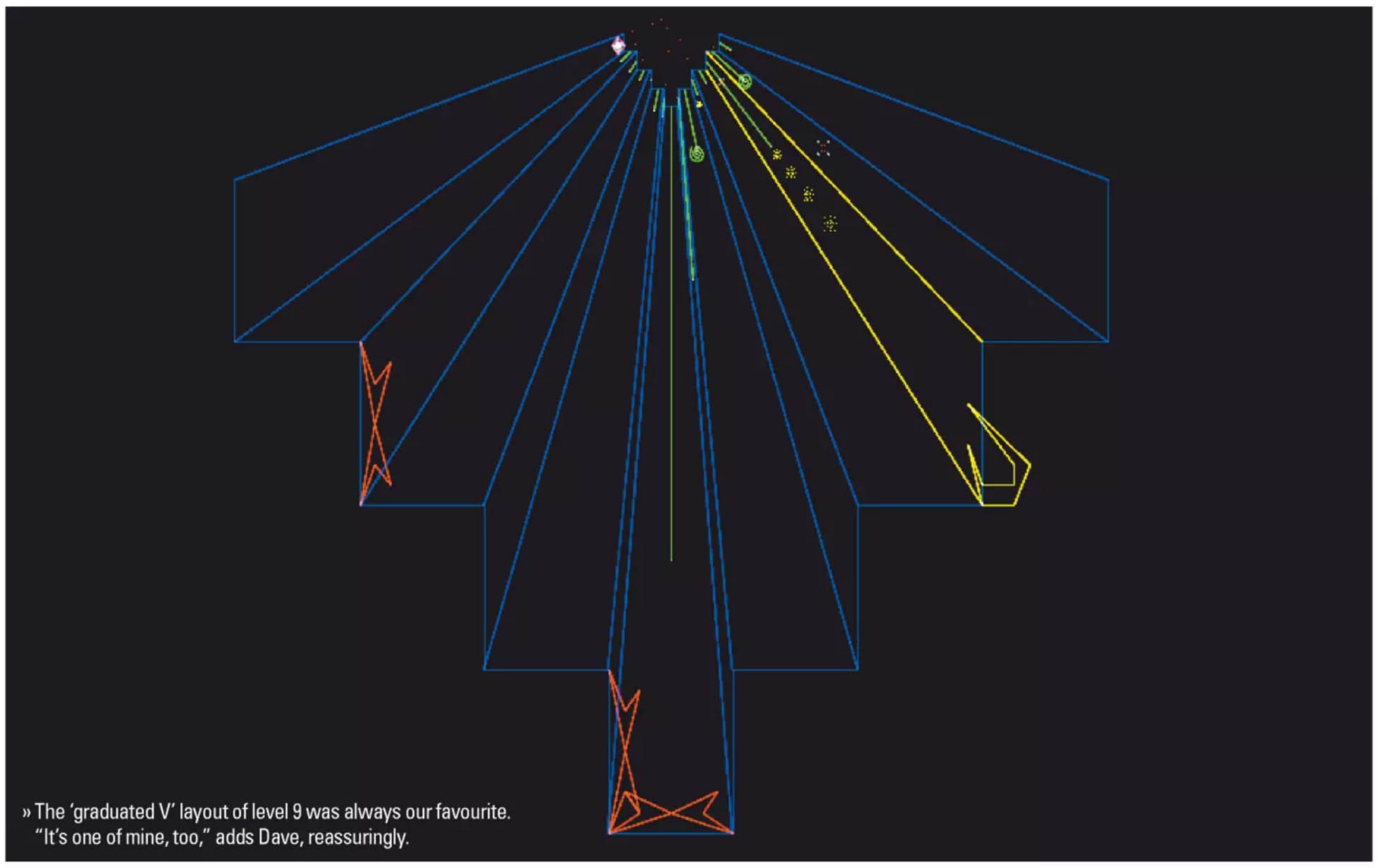


"I OFTEN HEAR PEOPLE RAVE ABOUT THE CONTROLLER"
DAVE THEURER

» Dave in the early Eighties at a Rotberg house party. (Photo courtesy of Ed Rotberg)

MCMLXXX

Eagle-eyed arcade gamers with a knowledge of Roman numerals may notice that the copyright message on the title screen of Tempest says 1980, yet the game wasn't officially released until 1981. We asked Dave about this discrepancy but he couldn't enlighten us, so we turned to RG's resident Atari expert, Marty Goldberg. "You can't go by start screens, as most of the copyrights in those were put in during development as a protection before the copyright was actually filed for," he explains. "The copyright for Tempest was filed for on 30/9/81 and lists 5/81 as the 'publication' date, which means the date the materials were first exposed outside of Atari, most likely when initial field-testing started. The actual release date is October of '81, which is when they started promoting Tempest. Some of the early ROM revisions have the copyright dates the year before." So now you know. Thanks, Marty!



» The 'graduated V' layout of level 9 was always our favourite. "It's one of mine, too," adds Dave, reassuringly.

action around the top edge of the 3D cylinder tapering off into the distance. I often hear people rave about the controller when they tell me how much they loved the game. It was extremely important."

It was the perfect control setup for a game that required you to swiftly skip around the rim of cylindrical levels to deal with multiple dangers radiating from its centre. Those strange geometric shapes gave *Tempest* a unique visual appeal, an abstract beauty that lent the game a timeless feel. Did Dave have a definite artistic vision for his project?

"We had the limits of our vector hardware to keep in mind," he notes. "It kept things sweet and simple. It's also nice to have it abstract when it involves blowing things up; I don't like explicit graphic violence. I do love fireworks, though, and the colour vector display gave me a chance to do a cool fireworks show when you get a high score. Also, the Super Zapper gave us a chance for another cool graphics display."

> "WE MUST HAVE SWITCHED TO THIS CONTROLLER WHEN WE CHANGED TO THE TEMPEST GAMEPLAY, WITH THE ACTION AROUND THE TOP"
>
> DAVE THEURER

Zapper power

Ah, the wonderful Super Zapper, which gave the player a last-gasp chance to destroy his foes as they overwhelmed his position and began creeping ominously towards his ship along the outer edge. Used once, it could be devastating; used again during the same wave and its effect was muted, leaving you to fight unaided until the next level, when it was thankfully recharged. Ending each stage also brought a memorable surprise, as your ship plunged into the hole, requiring some swift manoeuvring to avoid being impaled on deadly green spikes that had grown like accelerated stalagmites during the fray.

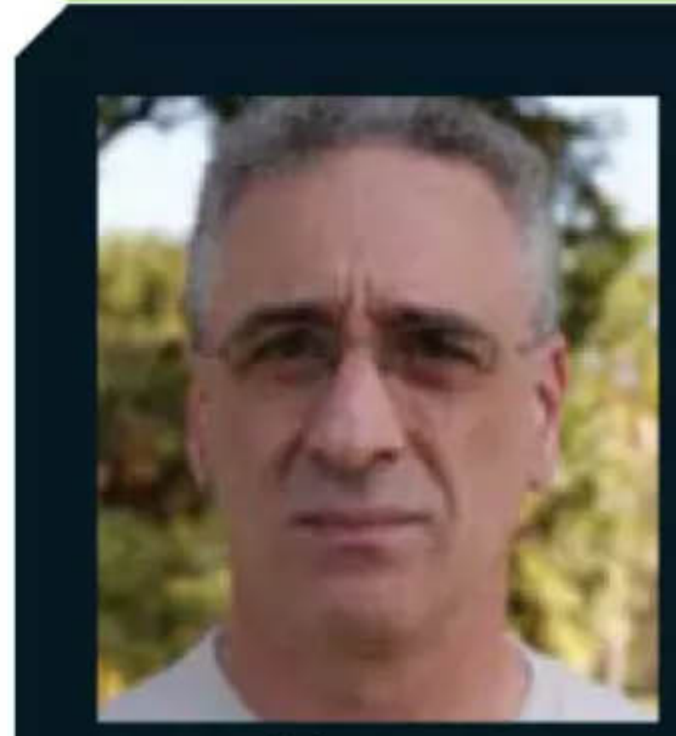
A further surprise awaited the player before they even began blasting. An options screen offered them the chance to select their start level, and choosing a higher stage to begin on would reward them with a greater bonus. It was a clever feature, dubbed 'skill-step', which allowed expert players to skip straight to the challenging stuff and boost their high scores, while not alienating newbies. "Yes, that was my idea," smiles Dave. "We wanted to maximise the fun time/total play time ratio. It was also to satisfy me and the other players in the lab. We didn't have all day to play the game…"

And play it they did. The ethos at Atari's coin-op division at the time seems to be one of friendly rivalry, with engineers encouraged to play their colleagues' games as they were in development and make useful suggestions, while still hoping their own project would be the one to triumph in the arcades. "Everybody would love to have a hit game," laughs Dave, "but it was a friendly environment at Atari. People felt free and open about saying anything, positive or negative, about a game. It was up to the developer to be able to handle the feedback without getting his ego involved."

Fortunately, Dave was beginning to hear very good things about his brand new arcade game. The project took almost a year from initial idea to final release, and once the 3D *Space Invaders* concept was ditched, Dave remembers development being generally smooth and free of glitches. However, as we probe deeper, we discover that an early iteration of *Tempest* wasn't quite as well received as the one we all know and love today. In fact, it made people sick.

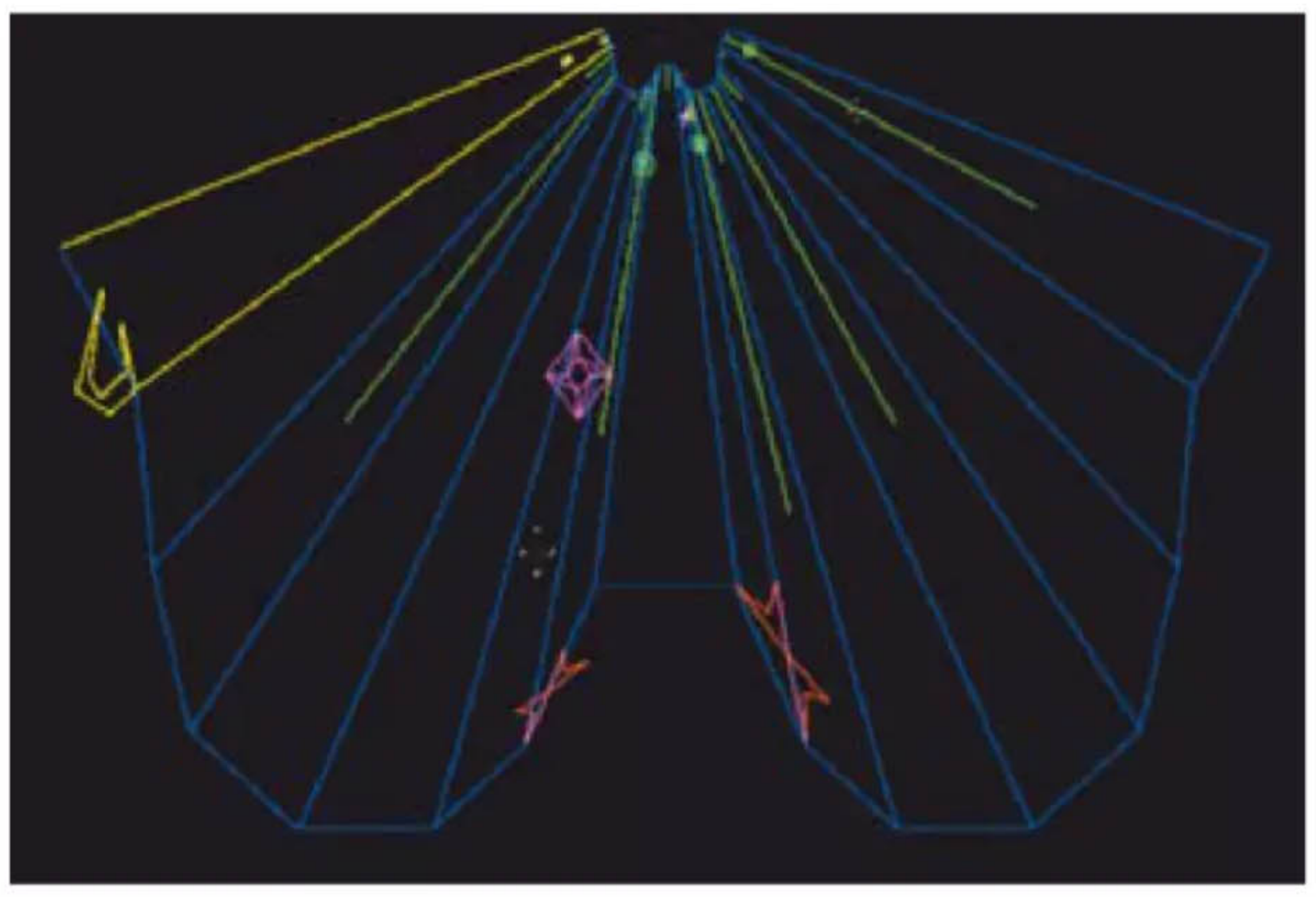
"The first version had the surface moving and the player's object stationary," he recalls. "Personally, I got nauseated after working on it for a period of time. Some others had a similar reaction. This version didn't last long and was eliminated a long time before field-

TEMPEST MEMORIES

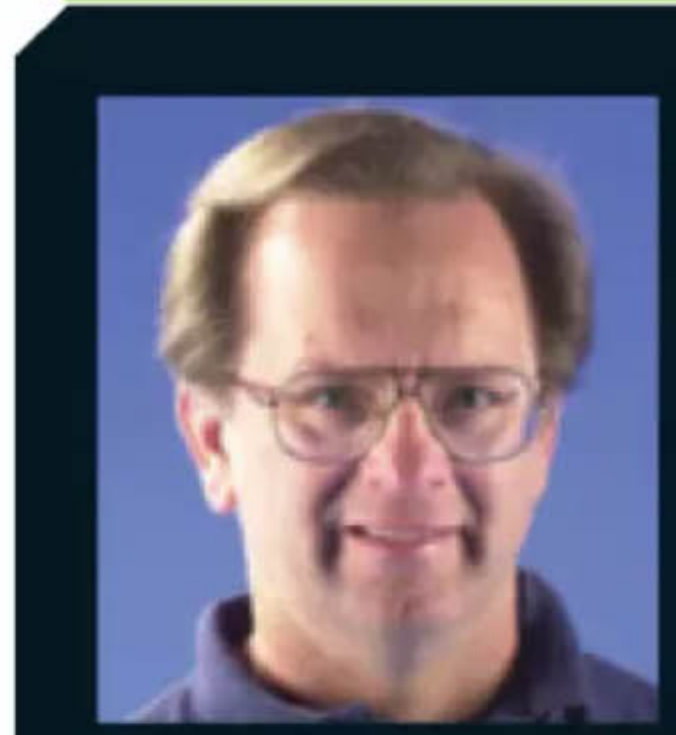


My favourite memory of *Tempest* was how it started. Dave was supposed to be working on 'first-person *Space Invaders*' and we used to kid him about how his first attempts looked like things attacking you on a bowling alley. One day, we came in and the whole game had changed into *Tempest*! It was, like most of Dave's work, mind-numbingly good. He understood what made a game fun, and most importantly, he was willing to completely rewrite his game, if that is what it took to find that fun. With *Tempest*, you always felt like you could do better and you simply couldn't wait to drop another quarter in to prove that! It was, for its time, visually stunning, followed the classic 'easy to learn, hard to master' paradigm, and had that special Theurer magic. Dave was, and still is, just a terrific guy. Salt of the earth and all that. I still count him as a very good friend. When he used to have a full beard, my first wife would always tell me how he looked like a Norse god!

» Ed Rotberg: Battlezone



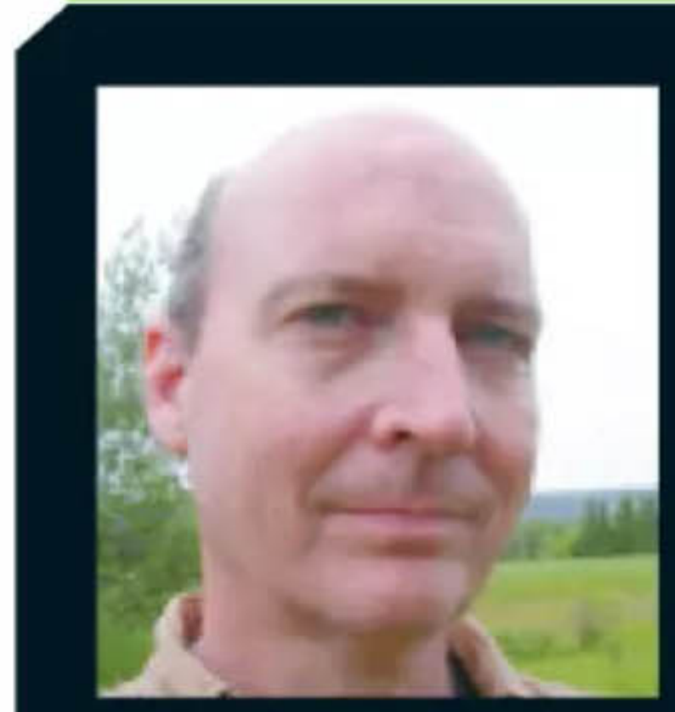
TEMPEST MEMORIES



We were doing 'walkabouts' at Atari at the time when *Tempest* was being developed. Walkabouts were used to get everyone at Atari to play your game and leave comments, one Friday a month, I believe. I'm sure Dave would have listened to any constructive criticism of gameplay from anyone. He was known for rewriting games if he felt they were not what he wanted. This was very unusual at Atari. I'm not sure if the final *Tempest* was his second try or his third. I remember one of Dave's first games was a soccer game with a trackball, a take-off of *Atari Football*. The problem was, you were so tired after one game you couldn't play another even if you wanted to! Tempest sold 30,000 units, so it was a very popular game. I'm not sure if it was the first game that allowed you to start at higher levels, but if it was, this certainly would have made *Tempest* a landmark for developers and players.

» Ed Logg: Asteroids

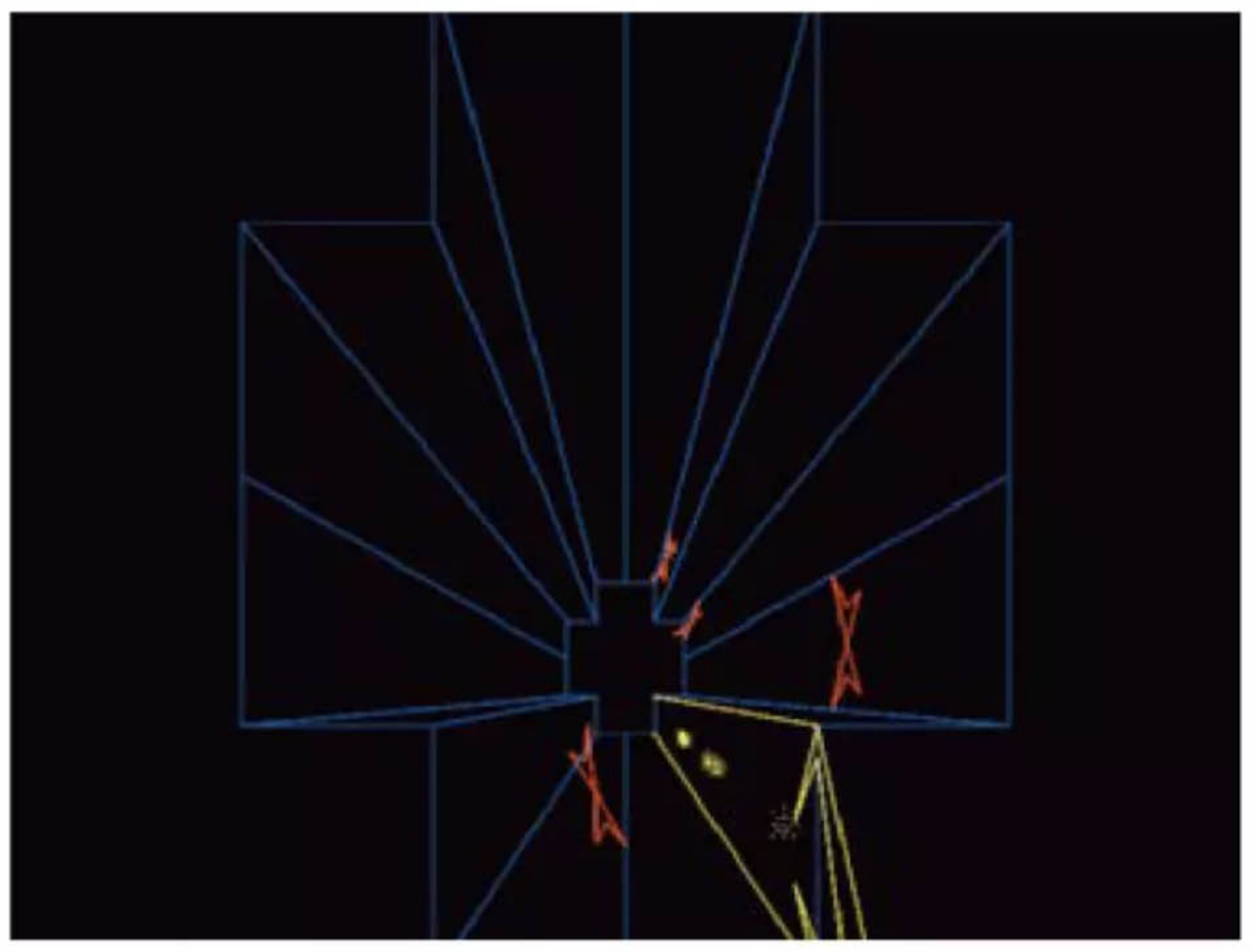
TEMPEST MEMORIES



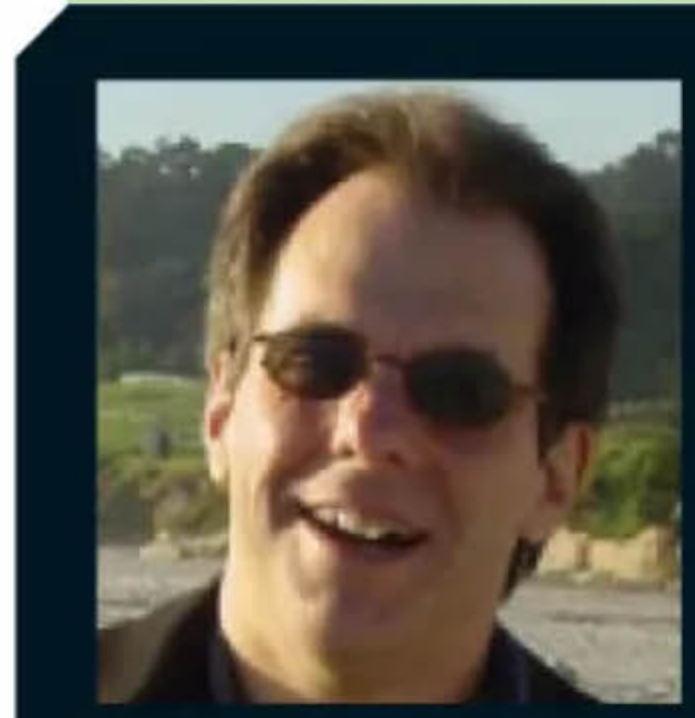
When I first saw *Tempest*, possibly at Mother's arcade in Chicago, possibly at another arcade or two, I found it so cool. I was totally blown away. The colour vectors were terrific, of course, but what really knocked me off my feet was the sense of depth that sucked me in, almost literally! Interestingly, if my memory serves, I only had a slight connection with true colour vectors. My Cinematronics games were given colour overlays, as in *Armor Attack* and *Star Castle*. It was only when I moved to Gremlin/Sega that I was able to experiment with colour vectors as a programmer and designer.

However, this was only for a short time, as I wanted to get away from vector graphics for a while. But enough about me! All hail *Tempest*! One of the most innovative and beautiful videogames ever made!

» Tim Skelly: Star Castle, Warrior



TEMPEST MEMORIES



I was supposed to get the first colour vector game for *Space Duel*, but when *Asteroids Deluxe* came out, they decided that *Space Duel* was too soon behind and pushed it back in the schedule. So the colour vector system went to *Tempest*, as did some of the vector work I created plus some sound routines, so that was cool. It wasn't a big deal, as I got an improved one for *Space Duel* as they worked out the kinks. I got an even better one for *Major Havoc* with some of my own changes, like sparkling vectors. The colour vector hardware was fragile. It didn't catch fire or anything, but it would constantly blow out the deflection amps and the monitor would stop working. It was also slower than the monochrome version at first, so you couldn't draw as much. I knew Dave very well, and played *Tempest* all the time during development… and found a few bugs, too! I thought the original *Space Invaders* concept sucked big time but, as it evolved, it was obvious *Tempest* was going to be great.

» Owen Rubin: Major Havoc, Space Duel

testing. No one got sick on the machine, but it did put a damper on one's desire to keep playing it!"

We briefly ponder the thought of vomit buckets being attached to arcade cabinets before inquiring about those crucial field tests. Their importance cannot be overestimated. An overflowing cash box after a week out in a real arcade could lead to a huge production run for your game. An empty one could result in a project a programmer has laboured over for months or years languishing as a prototype forever. Just how anxious was Dave before *Tempest* was sent out into the field, given that the game was such a radically different proposition for players, both visually and gameplay-wise?

"THE FIRST VERSION OF TEMPEST HAD THE SURFACE MOVING AND THE PLAYER'S SHIP STATIONARY. IT MADE PEOPLE FEEL NAUSEOUS. WE NEVER GET SICK OF IT THOUGH"

DAVE THEURER

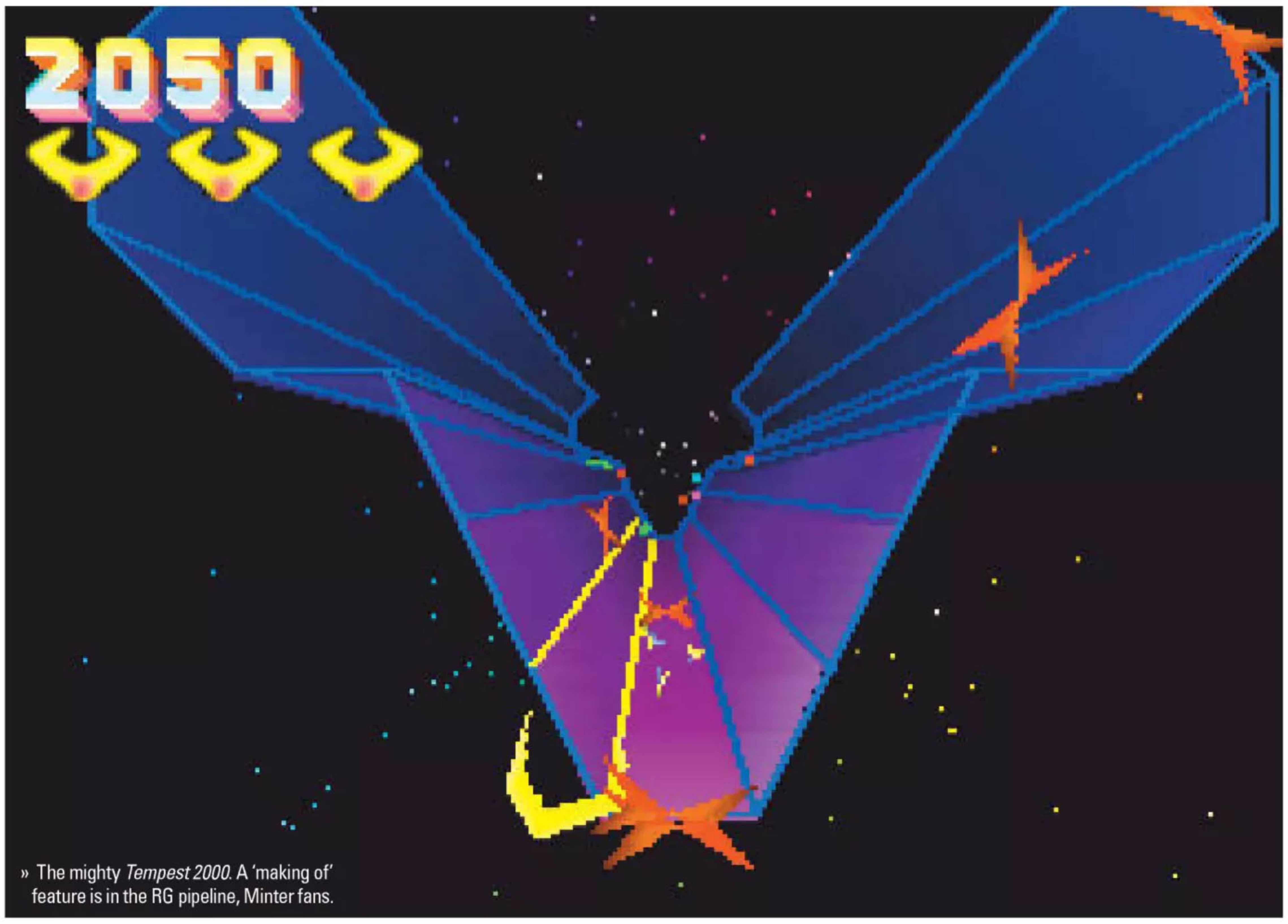
"No, we weren't nervous about it. It was new, exciting technology coupled with new, fun gameplay. We all loved playing it and were eager to get it out there and see how it would do. We would deliver it ourselves to the arcade in a truck and then stand back and watch the action. Often players would line up and put their quarters on the bezel to reserve their spot. We'd try to blend into the background, but stand close enough so we could get feedback from players' initial reactions.

Observing difficulties of new players, and resolving them, was key to making your game more popular." Which brings us back to the small issue of what to christen their baby. After noting the unfortunate association between the *Vortex* name and a feminine hygiene product, a new moniker had to be chosen. "Getting the right name for the game took a lot of effort and time. We started out calling it *Aliens*. The movie *Alien* had come out, so there was some identification, but some of us thought it was too close to the film name. So we came up with the name *Vortex*, since the first level was a cylinder, and you go swirling down it like a vortex at the end of the wave. The prototype *Tempest* game I have in my garage has a bezel with the name Vortex on it, but when we decided it had to be changed, Morgan [Hoff, the project leader] and I came up with a big list of potential names. Lots of folks at Atari associated with the game voted on their favourite name and *Tempest* was the winner. I had lobbied for that name so I was happy!" Democracy triumphed and so did the newly titled *Tempest*, selling an impressive 30,000 units and introducing the sparkling QuadraScan Video Display Unit to arcades. It was the perfect calling card for Atari's colour vector hardware; a game that showcased both pioneering visuals and innovative play mechanics, paving the way for the massively popular Star Wars, along with brilliantly experimental titles like Owen Rubin's *Major Havoc* and *Black Widow*.

One more thing…

Perhaps perfection isn't quite the right term, though. Just before the final version of Tempest was about to go into production, Dave noticed something that bothered him. An Atari logo on the start screen didn't look quite right. He decided to fix this tiny detail, but his solution had some unforeseen consequences…

"It was lopsided enough to make some players think, subconsciously perhaps, that something just didn't look



» The mighty *Tempest 2000*. A 'making of' feature is in the RG pipeline, Minter fans.

right," says Dave, "so I adjusted the layout of the screen at the last minute. I forgot that I had booby trapped the game so that if game pirates changed our screen by replacing 'Atari' with their own company name, it would trash a random location in memory after a delay of a few minutes, so they wouldn't be able to easily detect this with a hardware analyser. If the score was in a certain range, I'd take a couple of the digits from the score, and use that to come up with the hardware address in RAM to trash. Of course, the coin counter was in RAM, and that got trashed if the digits in the score pointed to that address. It took us two months to figure out the cause!"

Thus some fortunate players would unexpectedly receive 40 free credits, which was rather handy given the difficulty of the game at higher levels. Fuseball and Pulsar Tankers, which split into two evil enemies when shot, would appear from levels 33 and 40 respectively, and those master blasters who could reach stage 65 would be presented with the disorienting prospect of invisible tunnels. The brutal challenge that *Tempest* presents is perhaps one of the reasons why it remains such an iconic title.

No sequel please

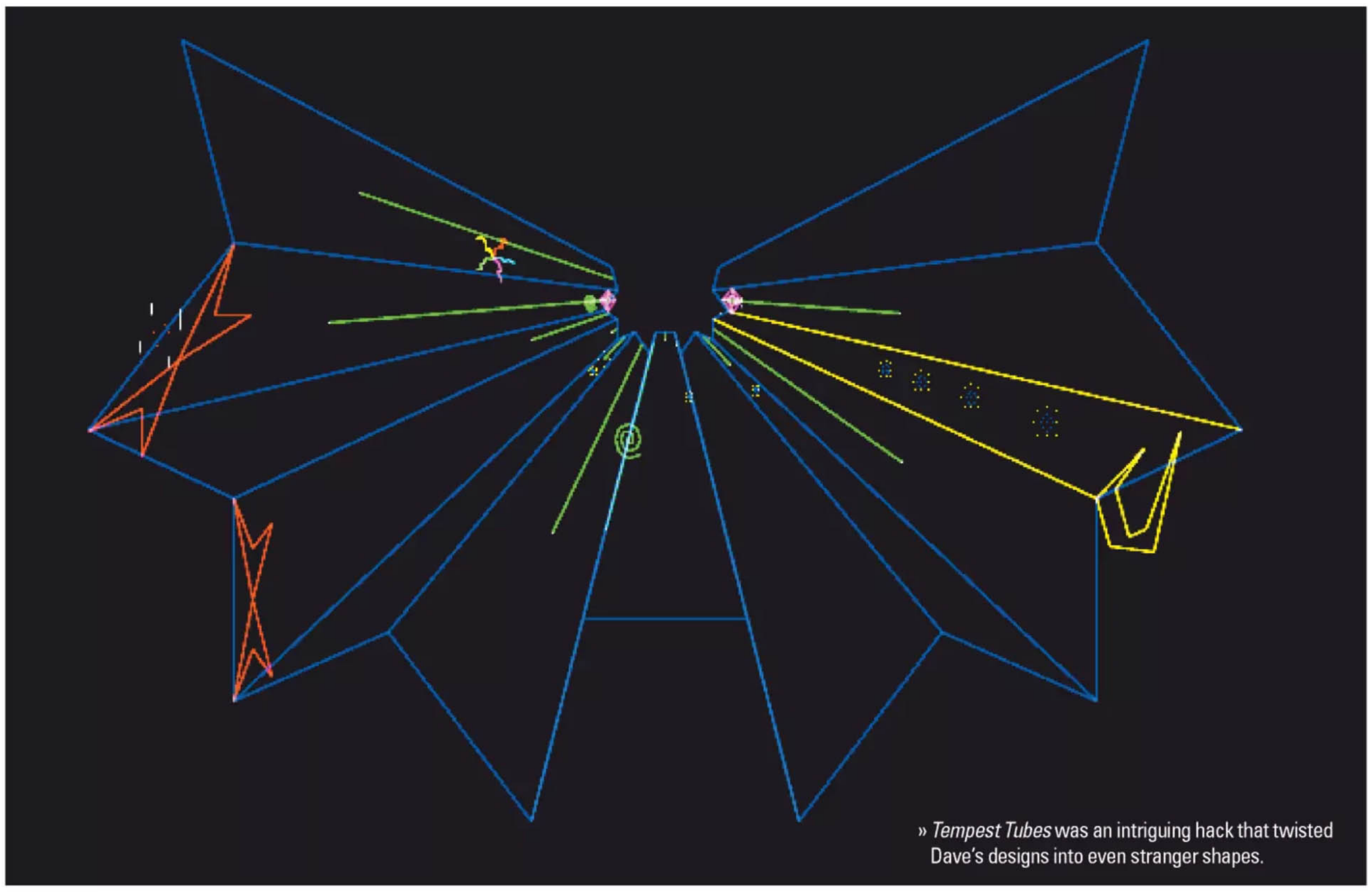
"I still enjoy playing *Tempest* if it's on a platform with a spinner controller," says Dave, proudly. "It feels good and it looks pretty; lots of colours, cool shapes, explosions and visual surprises, like blasting down the playing field at the end of a wave and then the cool feeling of lifting off the bottom of the platform into space. It's sort of exhilarating…"

Despite his obvious affection for his hit arcade game, Dave never really contemplated making a sequel to *Tempest*. This in itself is rather strange, because even then sequels were slowly starting to become more popular with gamers. Dave instead preferred to work on new technology and, indeed, his next project was the equally groundbreaking *I, Robot*, a marvellously ambitious game that pioneered the use of polygon graphics. So, with his time in the tunnels over, we wonder whether that childhood dream of sinister creatures emerging from the earth ever reoccurred.

"Never again," Dave assures us when we ask him. "Those nightmares were from a very short period when I was very young." And, instead of nightmares, we were left with a dream of a game…

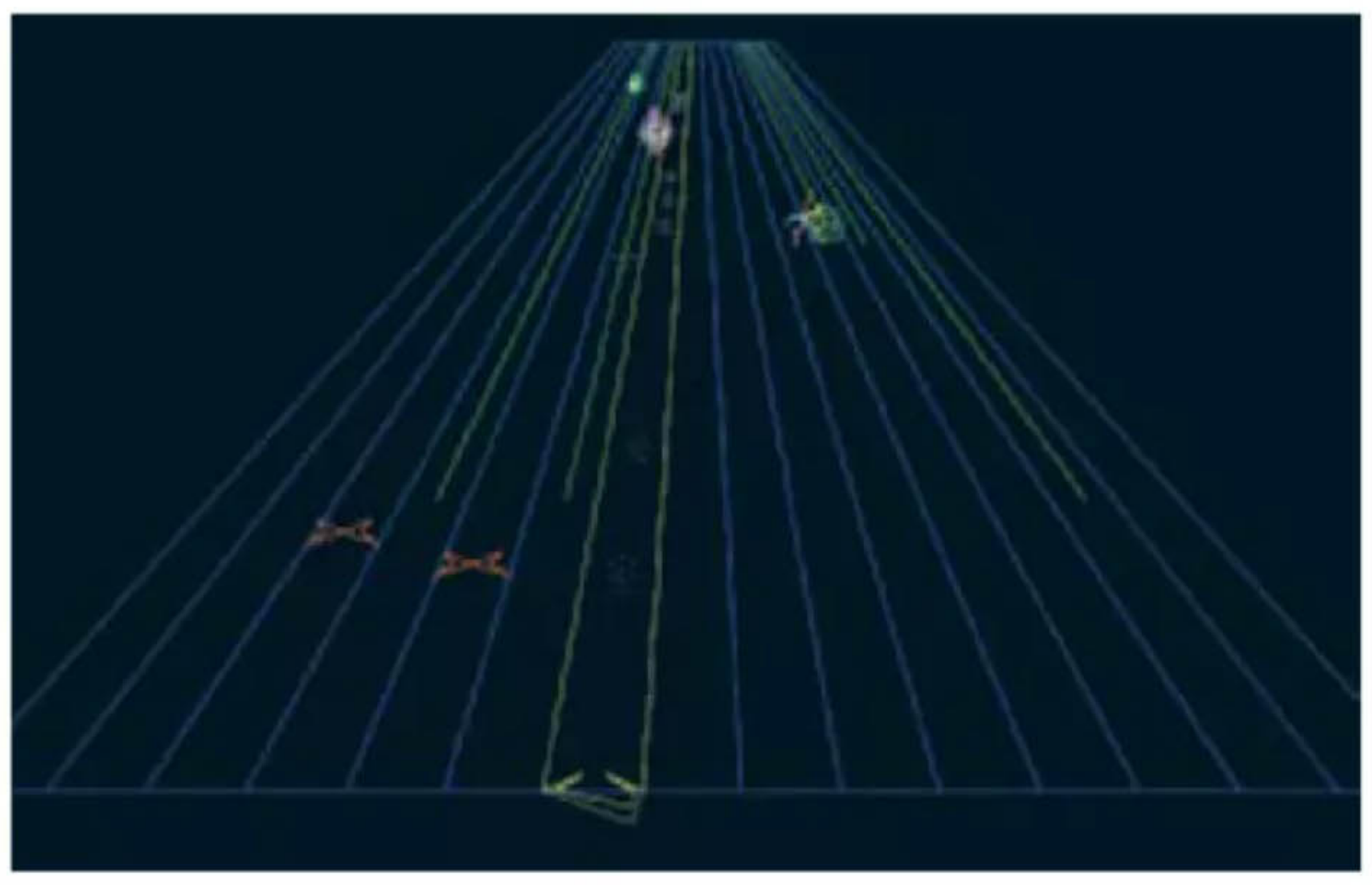
TEAM TEMPEST

Though *Tempest* was primarily Dave's baby, he is quick to give credit to his collaborators. "Morgan Hoff was the project leader. He was very calm, thorough and analytical about handling the development process and keeping all the various phases of the project in sync. Mary Pepper was the technician. Doug Snyder was the hardware engineer. He was funny; occasionally when the PC board wouldn't work, he'd pick it up about six inches off the workbench and drop it. This would often reseat the chips and it would start working again. Another time, we couldn't get the dev system to work; it turned out that the board had gotten so hot that the solder, which held in some of the chips, had melted and they had literally fallen out of the board onto the bench below!"

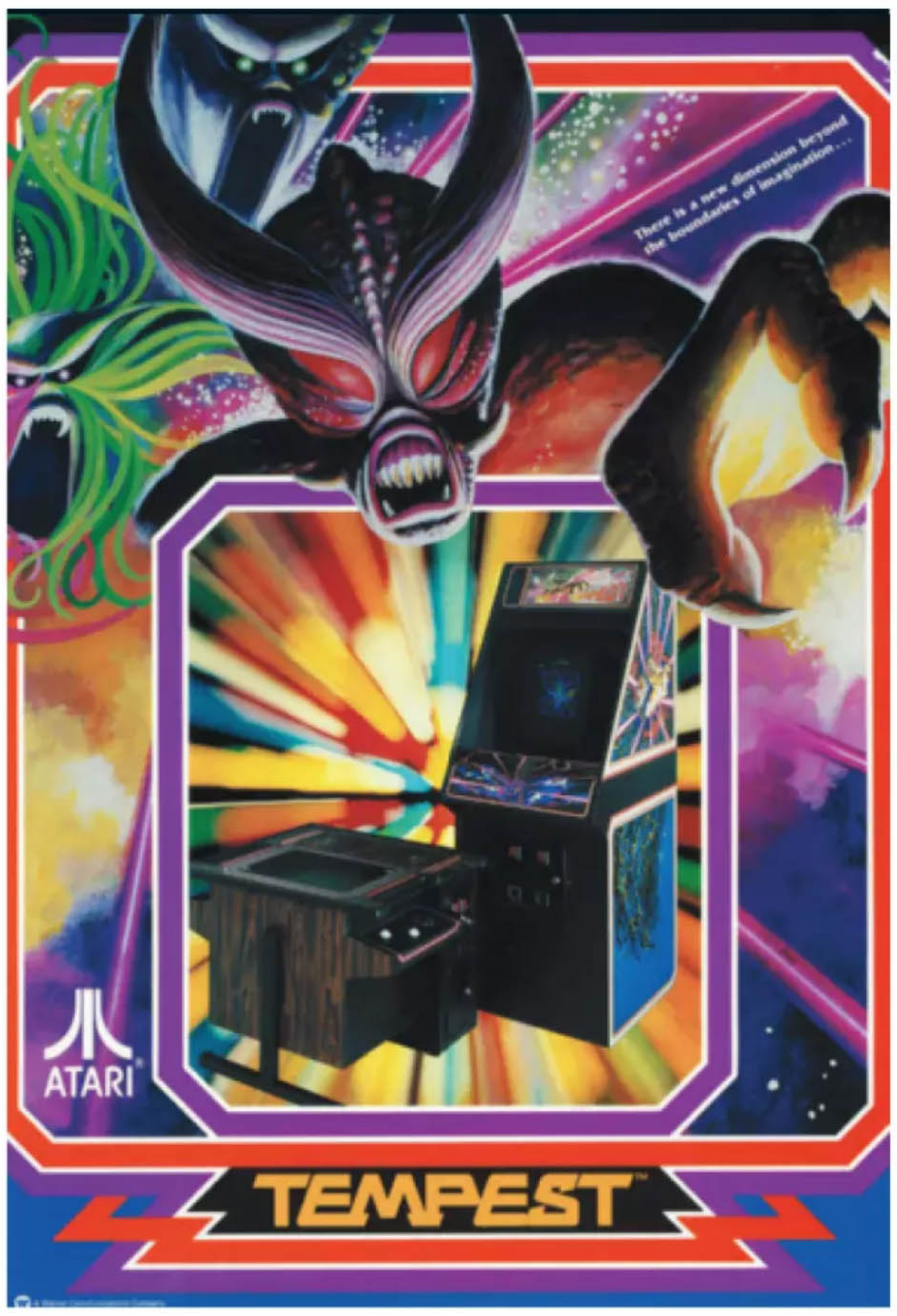


» *Tempest Tubes* was an intriguing hack that twisted Dave's designs into even stranger shapes.

> "IT FEELS GOOD AND IT LOOKS PRETTY; LOTS OF COLOURS, COOL SHAPES, EXPLOSIONS AND VISUAL SURPRISES, IT'S SORT OF EXHILARATING…"
>
> DAVE THEURER

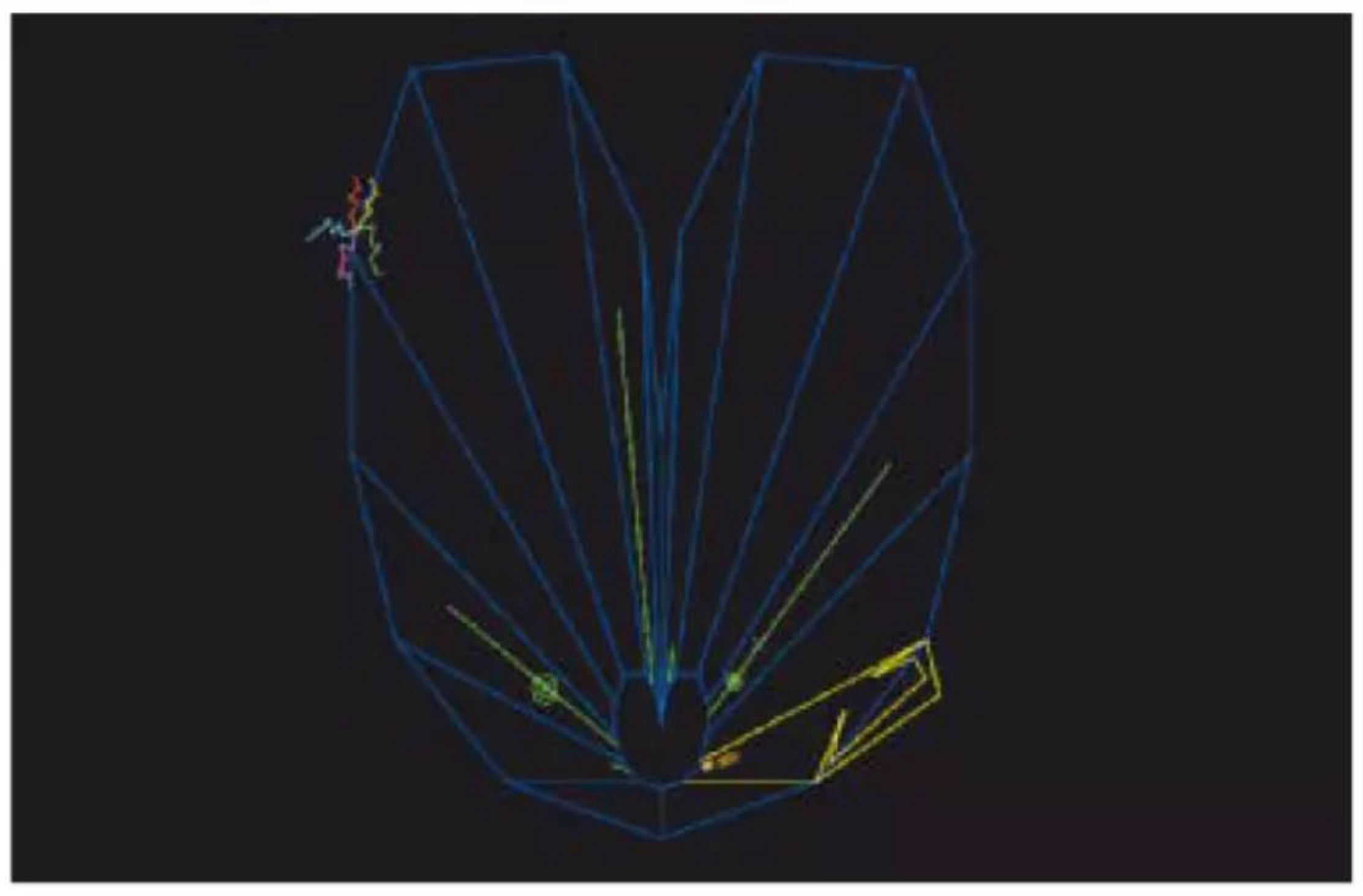


» While most levels are cylindrical, others have a horizontal layout, a nod to the original 'first-person *Space Invaders*' concept.

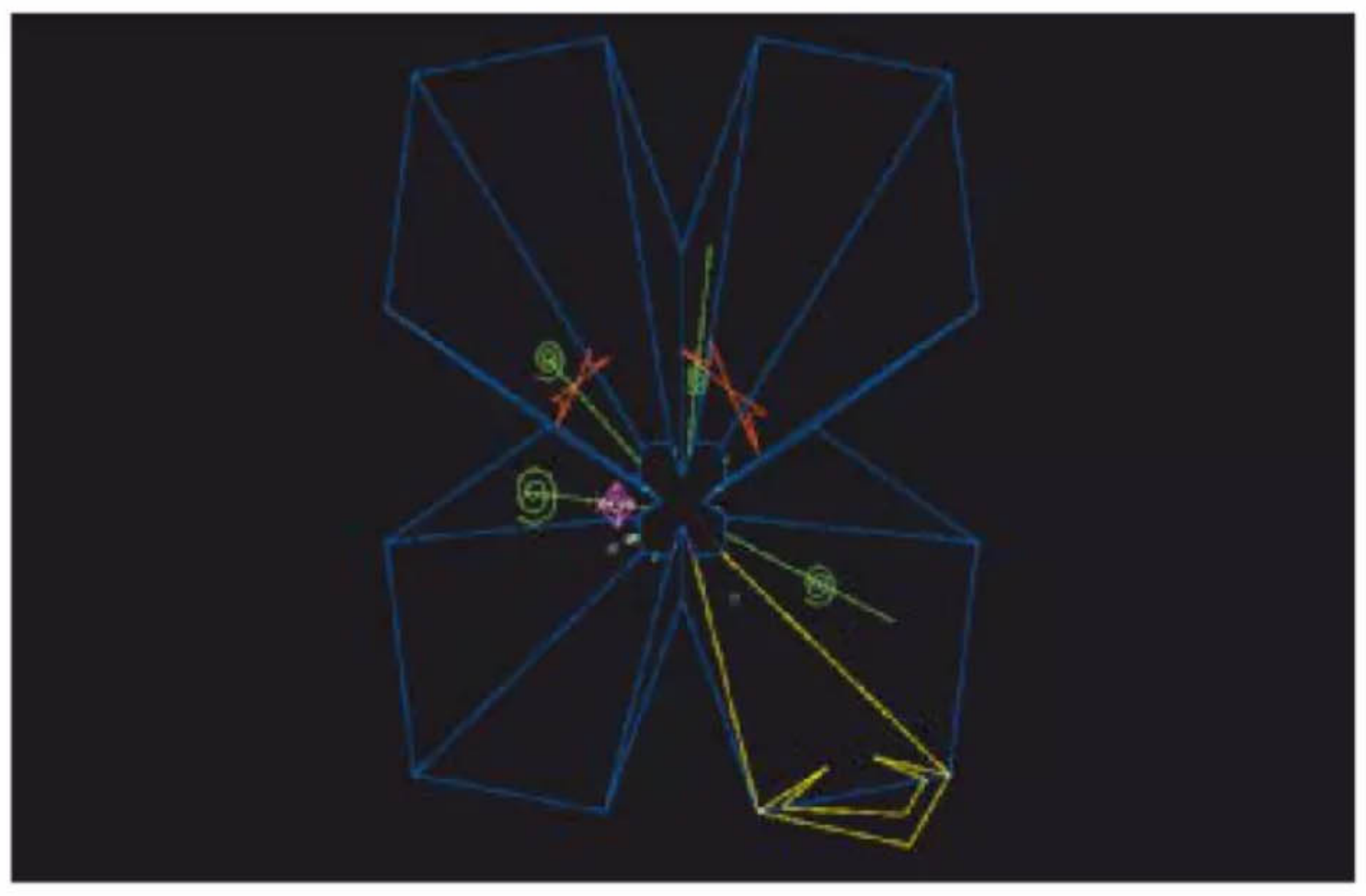


There is a new dimension beyond
the boundaries of imagination…
ATARI
TEMPEST

» The original arcade flyer was a lavish gatefold affair.



» *Tempest* requires insane reactions. Can you handle it?



» Watch out for the spikes as you hurtle towards the next stage.

THE MAKING OF PITFALL

WHEN MARIO WAS CONTENT DODGING BARRELS THROWN BY A GIANT MONKEY AND BOOTING KOOPAS ABOUT, A TRUE PLATFORMING HERO WAS ALREADY MAKING HIS MARK, COLLECTING TREASURES AND AVOIDING NASTIES – AND ALL ON THE HUMBLE ATARI 2600. JOIN CRAIG GRANNELL AS HE TALKS TO DAVID CRANE ABOUT THE GENESIS OF PITFALL!

***Pitfall!* For gamers of a certain age, the name alone is enough to bring about a warm, fuzzy feeling of gleeful nostalgia.** Often cited as the earliest example of traditional platform gaming, released as it was in 1982, programmer and Activision co-founder David Crane managed to eke out more than many thought possible from the humble Atari 2600.

Technically amazing for the time, the game featured varied backgrounds and other impressive tricks. Pitfall's slick visuals were matched by its all-engrossing gameplay, the player guiding Pitfall Harry though dozens of 'scenes', searching out treasure, using vines to swing across gaping pits, leaping on to the heads of crocodiles, and nipping underground to take shortcuts.

The genesis of *Pitfall!* was its main character – in the late Seventies, David was tiring of typical games.

"Back then, there were very few attempts at animated figures in games – you controlled tanks, jet planes, *Pong* paddles, and so on, because the limited number of display pixels severely restricted the creation of smooth animation," he explains. But in 1979, David had developed a realistic-looking human character – he just needed a game for him. "Each time I was about to start another game, I brought out my little running man and cast about for a game that needed him," remembers David. "I tried a cops-and-robbers game, in which the man was running from the police, but I didn't like that concept, and so he went back on the shelf."

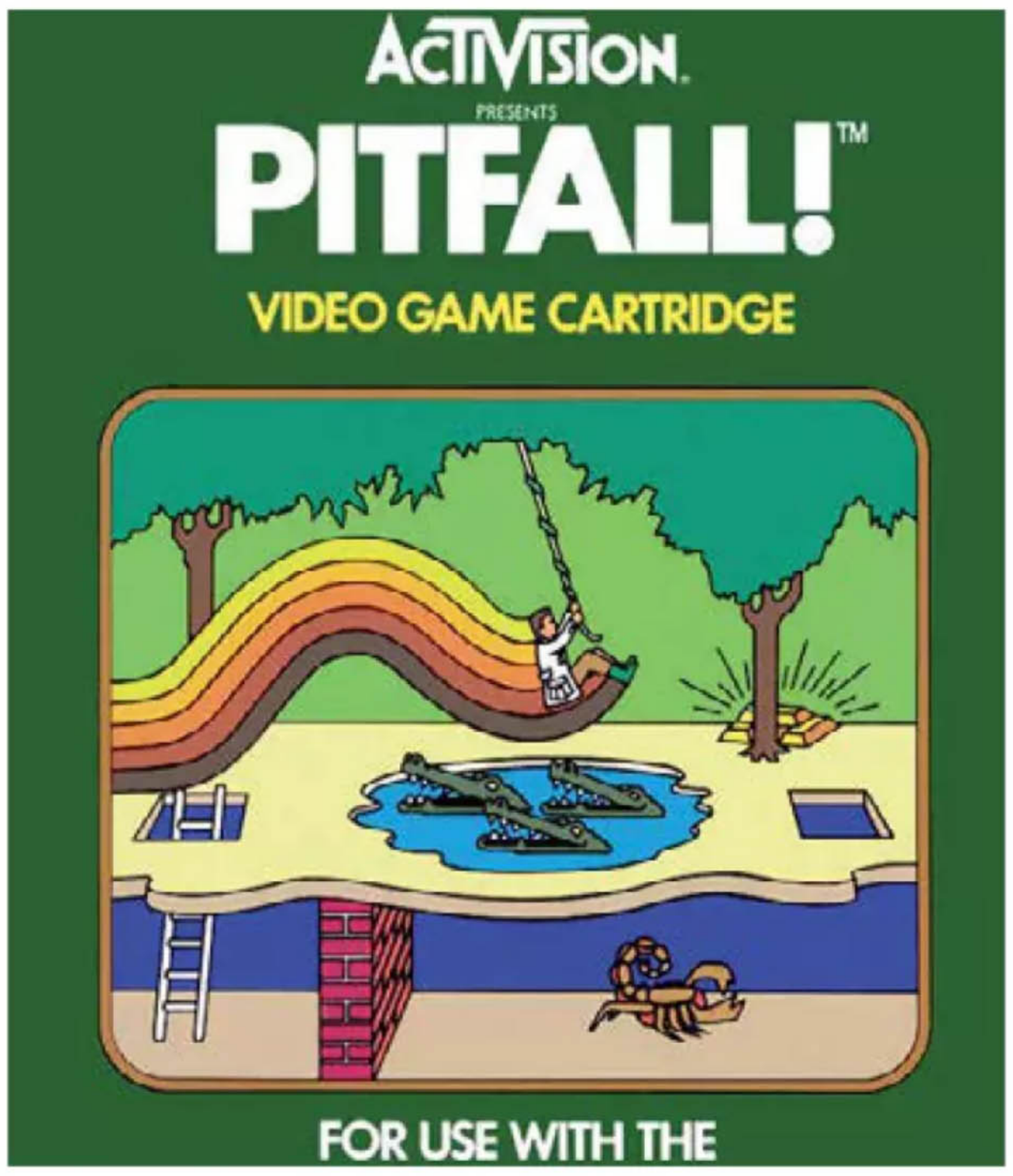
Eventually, in 1982, David was between games and decided he'd finally figure out a game for his diminutive animated man. He sat down with a blank sheet of paper and drew a stick figure in the centre. He then said: "Okay, I have a running man… Let's put him on a path," and drew two more lines on the paper. The path needed a location, and so David placed it in a jungle, surrounding it with trees. And then he had to figure out why his character was running in the first place. "I drew treasures to collect, enemies to avoid, and Pitfall! was born," he says, noting that the entire process of coming up with the concept took about ten minutes (although the subsequent programming clocked in at a rather more lengthy 1000 hours).

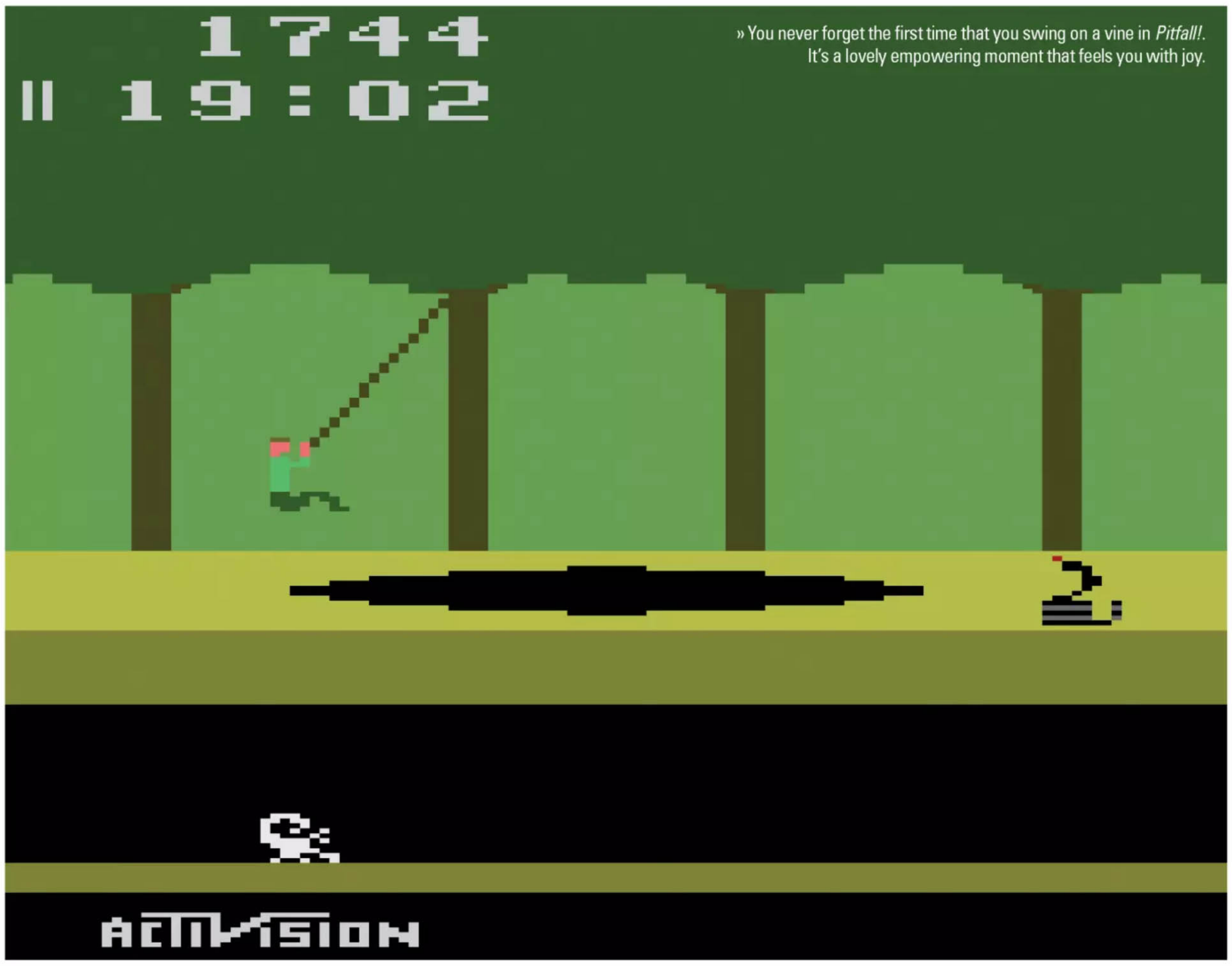
Inspiration time

As David developed his game, three clear influences crept in: "First, *Raiders Of The Lost Ark* was playing in cinemas, and that started me thinking of an adventure in the jungle in the first place. Secondly, I really wanted Harry to swing on a vine, for which I have to give a nod to Tarzan. And finally, I remembered from deep

IN THE KNOW

- **Publisher:** Activision
- **Developer:** David Crane
- **Platform:** Atari 2600
- **Year released:** 1982
- **Genre:** Platformer
- **Expect to pay:** £5 ($5)





» You never forget the first time that you swing on a vine in *Pitfall!*. It's a lovely empowering moment that feels you with joy.

in my childhood a pair of Magpie cartoon characters called Heckle and Jeckle. They had a sequence during which they'd run across the heads of alligators, barely escaping the snapping jaws. I thought that would make for an interesting skill sequence in the game." But even with these elements starting to fall into place, David considered *Pitfall!* too linear: "The game began as a single-level trip through the jungle, but that made for a boring experience." The solution was the addition of an underground passageway, guarded by scorpions. This provided a crucial level of strategy to the game, because each screen that Harry traversed underground was the equivalent to three screens on the surface.

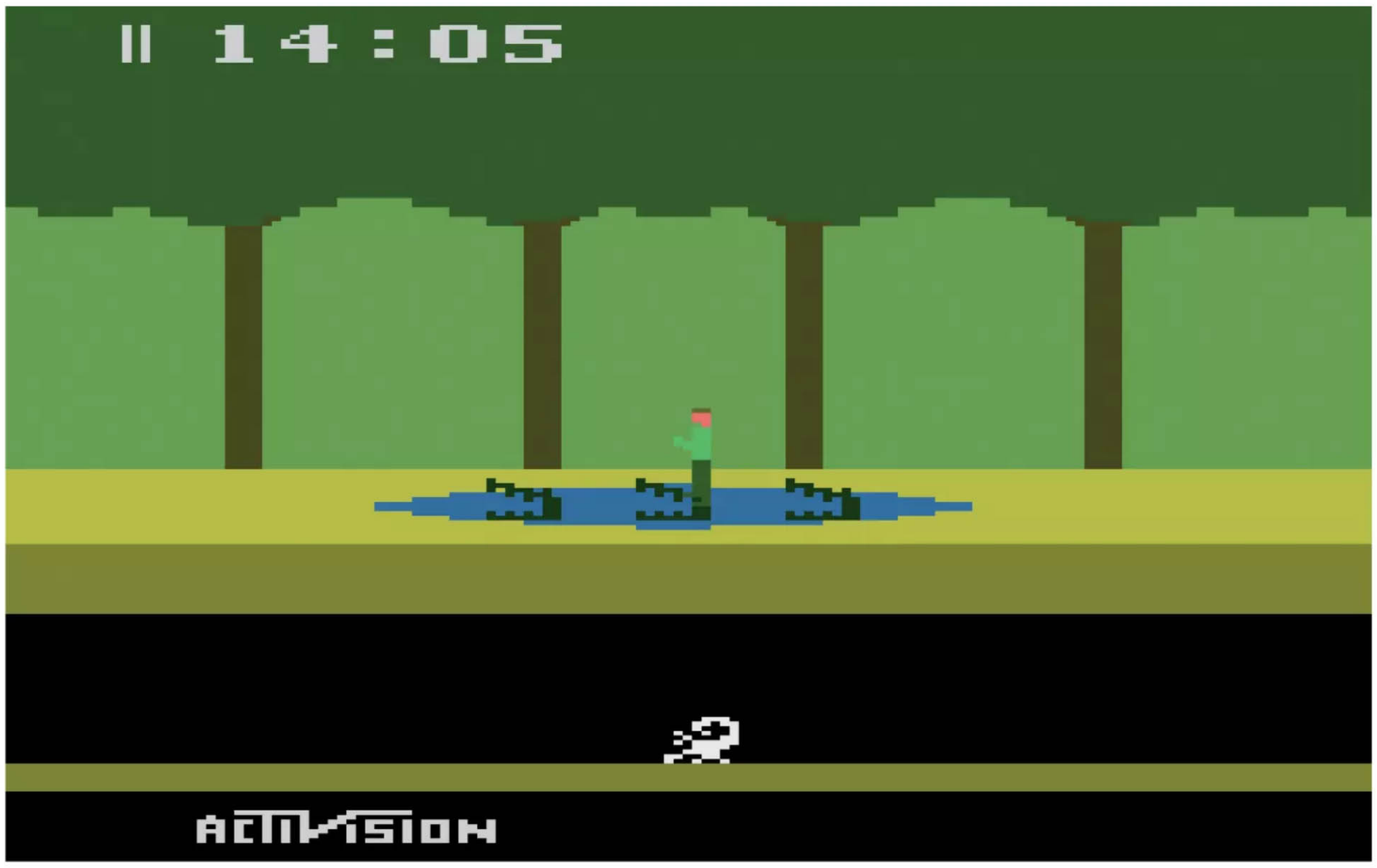
"Using the underground paths, you could bypass empty or treacherous overhead screens, and without using them, you can't finish the game," says David. Although simple by today's standards, cramming all of these ideas and characters into the Atari 2600 was a huge undertaking, and David admits that many ideas had to be tailored specifically for the console. "All objects in an Atari 2600 game are selected based on what can be drawn using the system's limited capability," he explains. "For example, early in my career at Atari, I designed a slot-machine simulator. When I tried to draw traditional slot-machine symbols – cherries, lemons, oranges, and so on – it became clear that there was no way to render them in eight monochrome pixels. Therefore, I used cacti, cars and other angular objects that were easily recognisable when drawn with pixels." A similar process was used with Pitfall!, with David colouring in squares on squared paper to figure out what the pixelated graphics would look like: "I experimented with [different] objects until their identities were clear, and made the game work with the best-looking graphics."

> "RAIDERS OF THE LOST ARK WAS PLAYING IN CINEMAS, AND THAT STARTED ME THINKING OF AN ADVENTURE IN THE JUNGLE IN THE FIRST PLACE"
>
> DAVID CRANE

Pixel power

Oddly enough, Pitfall Harry sort of started life as David himself, before being reduced to a handful of pixels: "I'd worked on the little running man for a while, posing in mid-stride and sketching my own leg and arm positions, and so you could say that what you see is me running across the screen. Once you reduce something to a few pixels, however, any similarity to any person, living or dead, is lost!" Elsewhere, the swinging vine also proved to be a technical challenge. "It was made out of a single-pixel-wide Atari 2600 object whose position was moved left or right down the screen – you can see the same technique in two of my earlier games: *Fishing Derby and Laser Blast*," says David. Even carefully crafting pixel-perfect graphics wasn't enough to get around the 2600's limitations, though, especially when taking into account the sheer size of *Pitfall!* "The world of *Pitfall!* is a circular path 254 screens in circumference. The game ROM contains only 4K of memory, and so there's not enough memory to hold both Harry's graphic frames and the definitions for 254 screens," explains David, noting that the largest ROM in 1982 was a mere 4096 bytes, and that these days, 254 screens could take over half a million bytes. "But this is the kind of challenge that I have always enjoyed," says David. "I solved the problem on *Pitfall!* by creating an algorithm that defined every screen mathematically. The actual definition of the entire world took fewer than 50 bytes of ROM."

The way David went about accomplishing this was, he says, very technical. "At the core is a polynomial



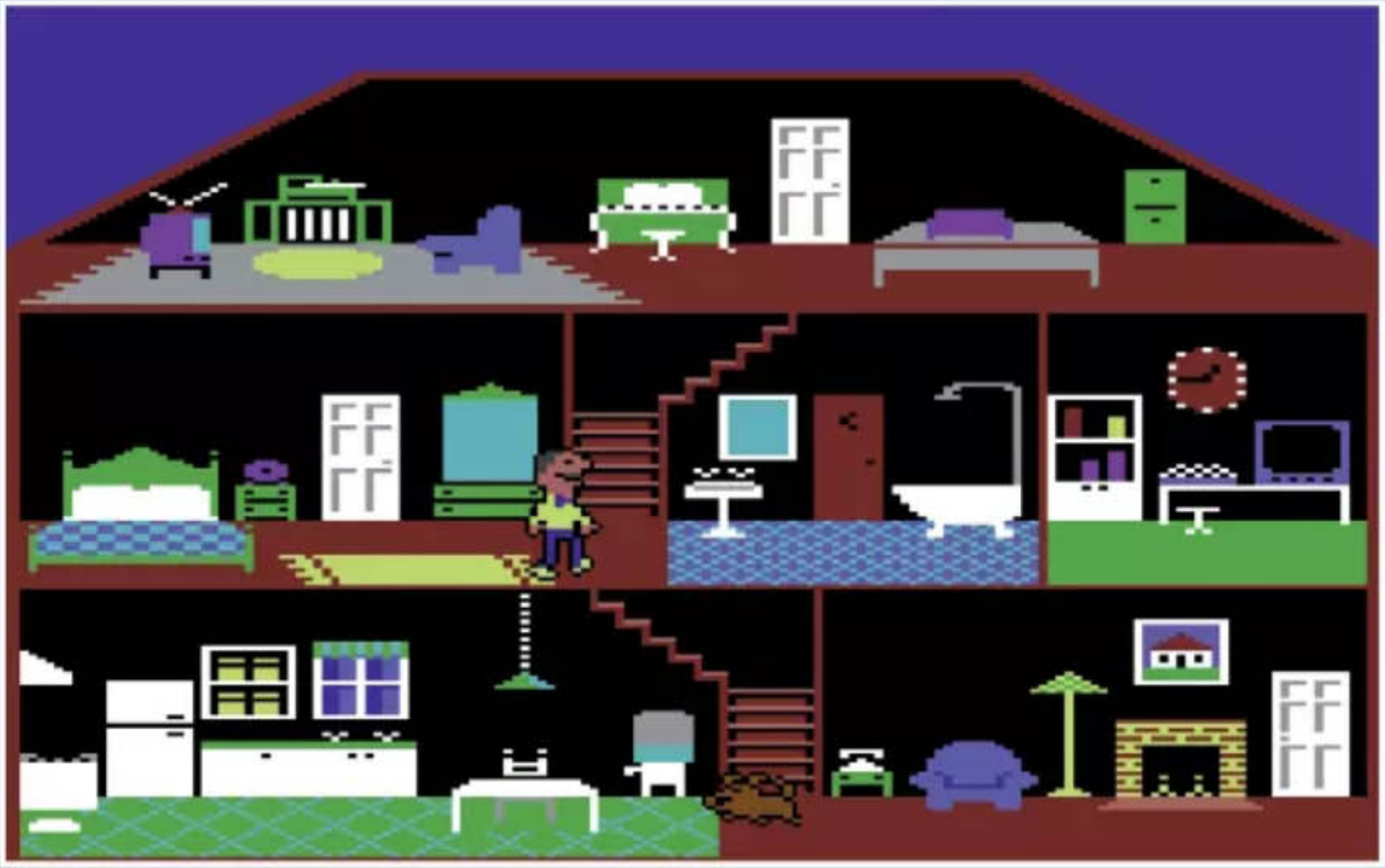
» Harry thanked his lucky stars that the crocodiles were too lazy to eat anything that didn't stumble right into their open mouths.

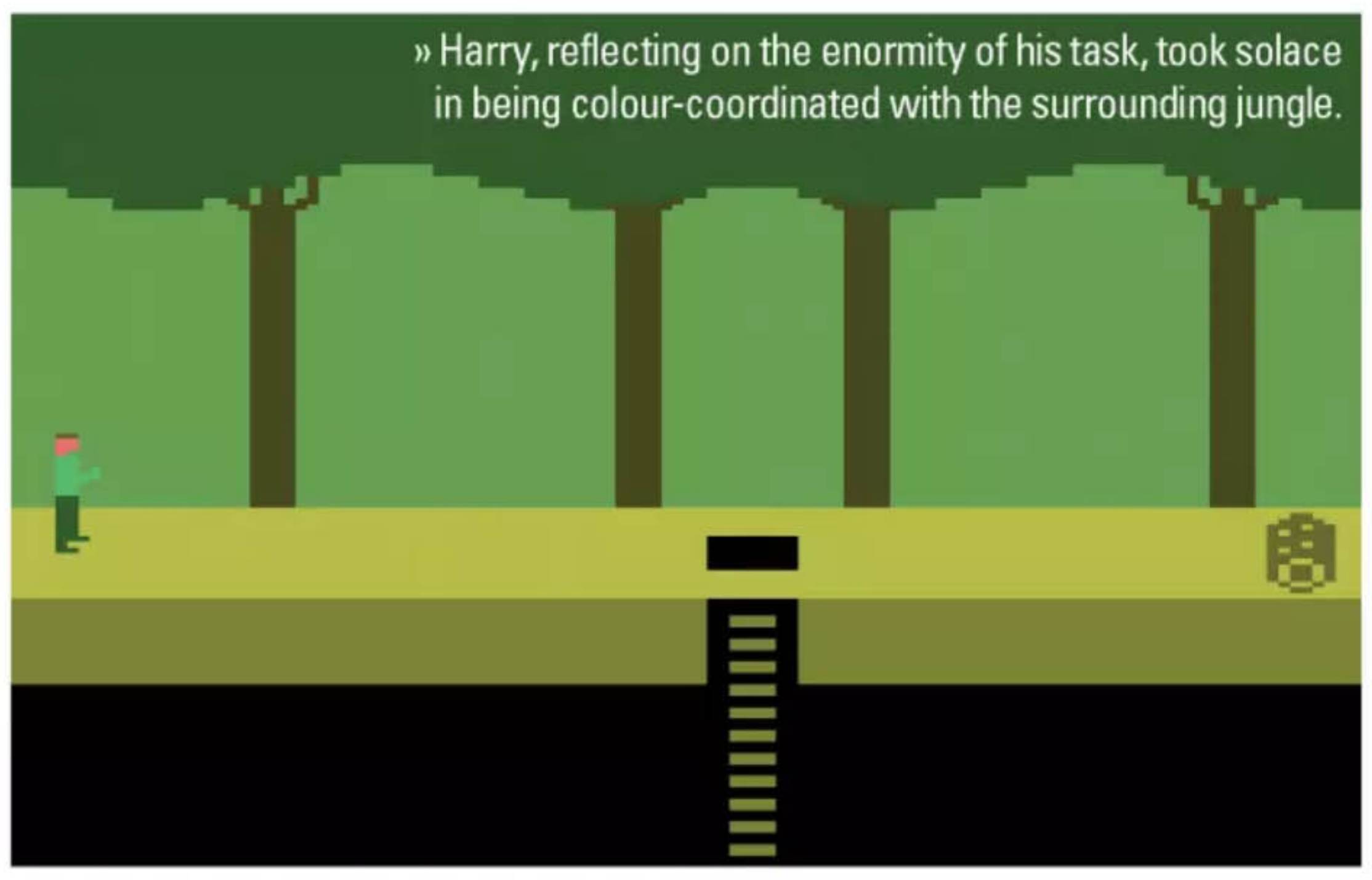
DEVELOPER HIGHLIGHTS

Freeway
System: Atari 2600
Year: 1981

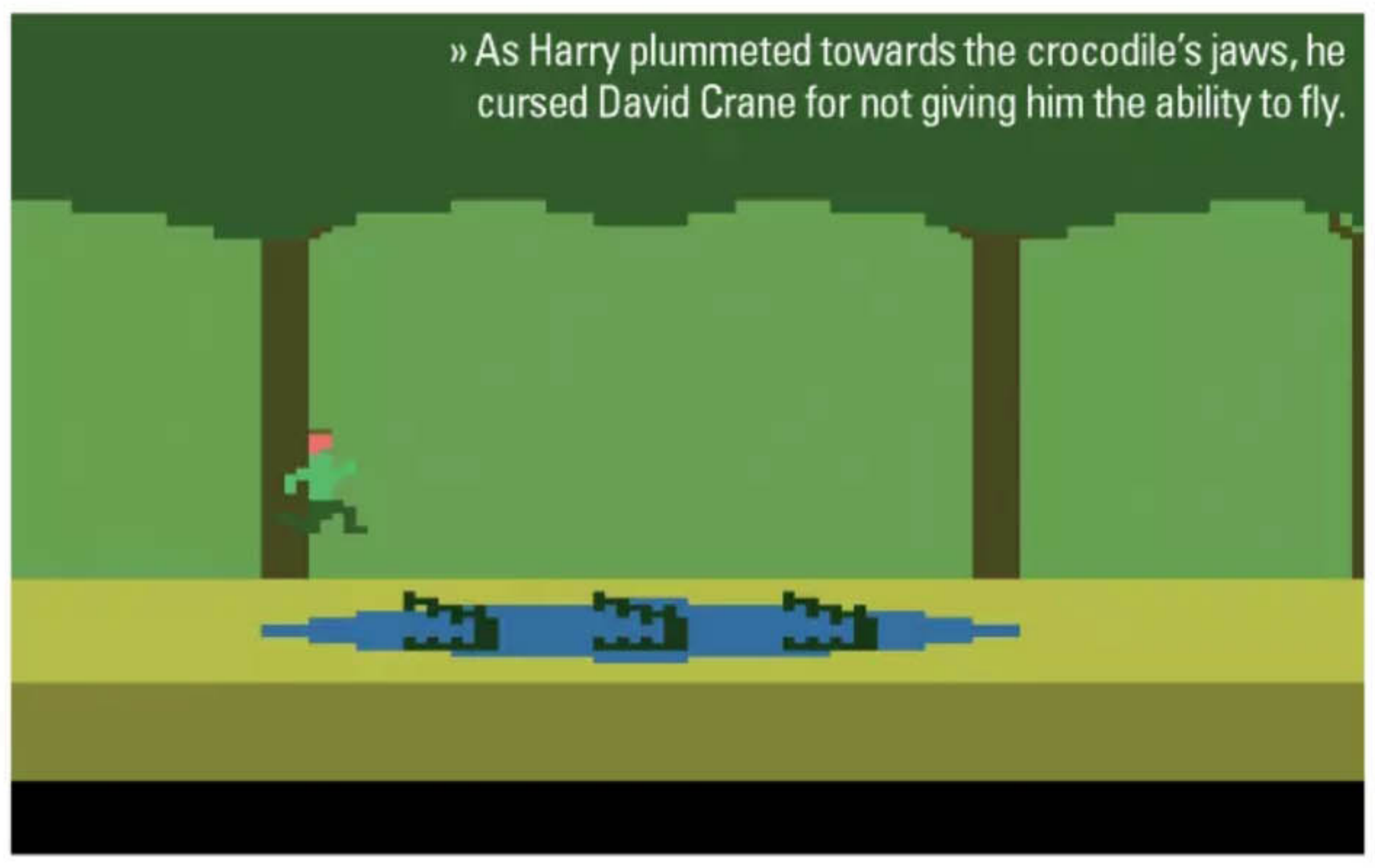
Ghostbusters
System: XL/XE, Commodore 64, MSX, NES, Sega Master System, ZX Spectrum
Year: 1985-9

Little Computer People (pictured)
System: Amiga, Amstrad CPC, Apple II, Commodore 64, ZX Spectrum (128K)
Year: 1985-6

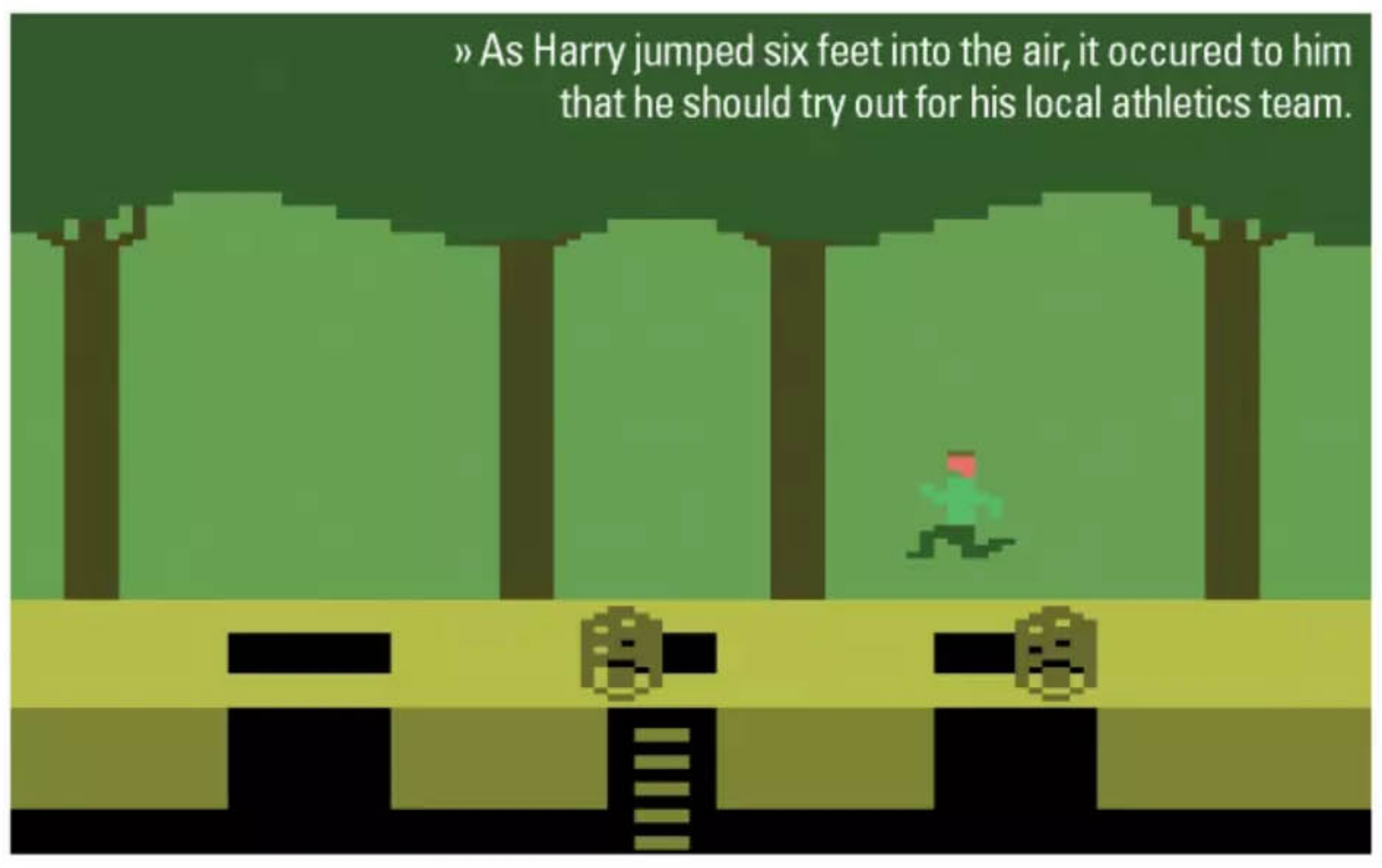




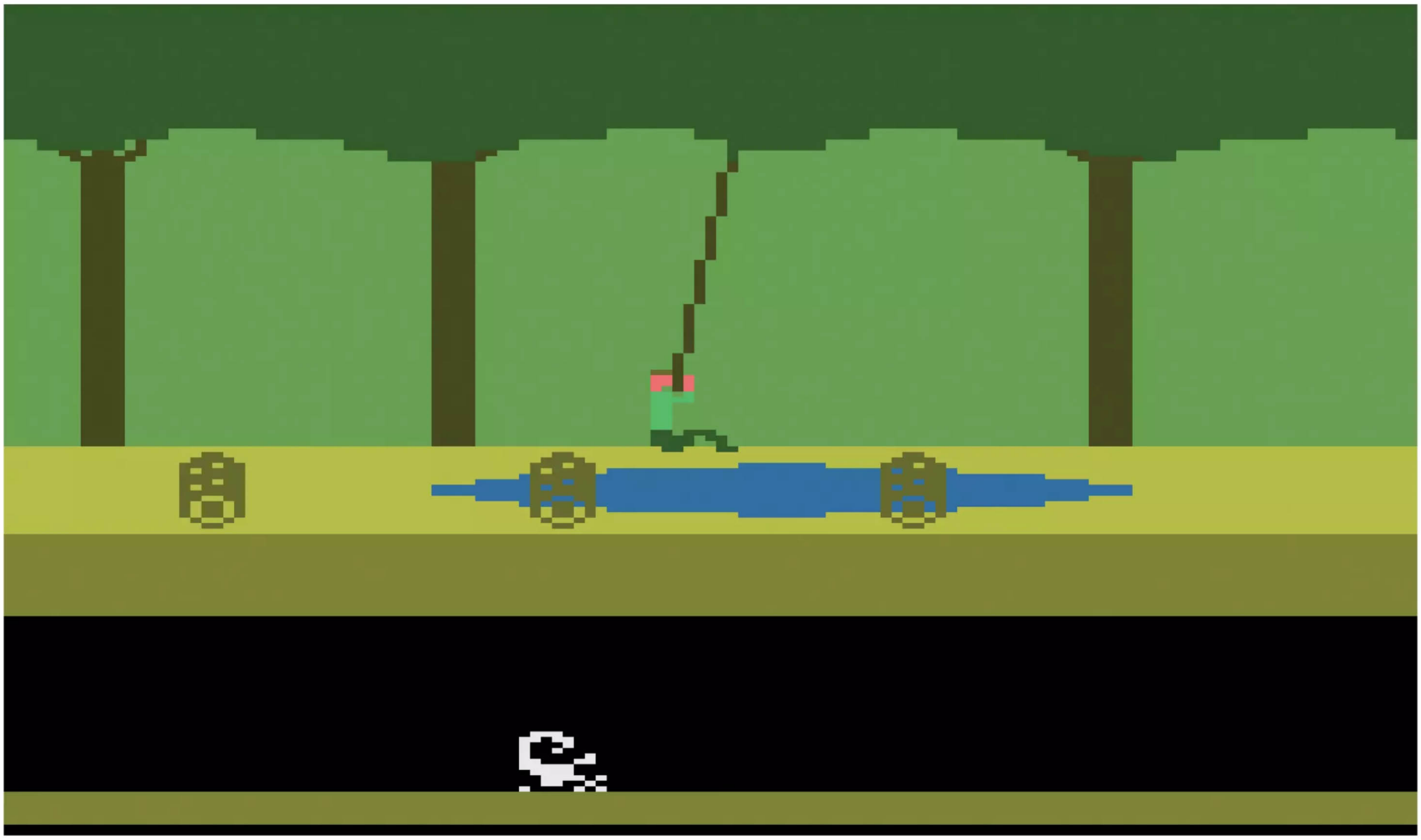
» Harry, reflecting on the enormity of his task, took solace in being colour-coordinated with the surrounding jungle.



» As Harry plummeted towards the crocodile's jaws, he cursed David Crane for not giving him the ability to fly.



» As Harry jumped six feet into the air, it occured to him that he should try out for his local athletics team.



» Harry resisted bellowing a Tarzan-like cry as he swung across the lake.

TEAM PLAYERS

Although many of Activision's games are credited as solo projects, David notes that much of the company's success came from the group synergy within the design lab: "While we each had our own game project working, we'd also kibbutz on each-other's games. That way, each game had the flavour of its designer, but benefited from the vision and experience of the entire group."

Pitfall! was no exception. David explains that only a week before *Pitfall!'s* release, the game only offered the player a single life. "I was experimenting with that concept as sort of the ultimate challenge," David explains. "That's right – fall in one pit and start over from the beginning! Thankfully, my buddies practically tied me to my chair until I put in extra lives, and I'm glad they did!" David notes, though, that most help came in much smaller details: "These things were so small that taken individually you'd never notice. It was the sum total of all the feedback and suggestions that polished the games to a fine edge."

counter – a special binary counter that counts in a pseudo-random sequence. We used these polynomials to generate randomness in many of our games, but for the screen definitions I made a special counter that could create a sequence both forward and backwards," explains David. "If I called one algorithm, it would give me the next number in the sequence; with another, I could get the previous number." Therefore, if Pitfall Harry ran off of the right-hand edge of the screen, David called up the next number in the sequence; if he turned around and ran back off of the left-hand edge, he'd call up the previous number. With this number used to define each screen, a unique scene was defined that's the same each time the player visits it. "That was the tricky part. Now, if we select screen elements based on this number, we can define each individual screen. For example, we can define the background tree patterns based upon three bits of the 8-bit number, and the pit or pond type from three other bits. As long as every detail of the screen is based on that one number, the entire world can be computed algorithmically with very little memory. After that, you just have to find an interesting point in the sequence to start the game! As far as I know, this is the only time this technique has been used in this way."

> "PITFALL SPAWNED AN ENTIRE GENRE OF GAMES; THERE WERE OVER 600 PLATFORM GAMES RELEASED TO THE MARKET FOLLOWING PITFALL!"
>
> DAVID CRANE

It's all in the details…

With such attention to detail and careful programming, along with the fact that *Pitfall!* was a huge technical achievement, it perhaps comes as little surprise that David wouldn't want to turn the clock back and change anything. "I tweaked the heck out of that game, and I didn't let it go to market until I was satisfied. There is nothing I would have done differently," he claims. When pressed, though, he does admit that the limitations of the Atari 2600 meant that one thing couldn't make it into Pitfall!: "I wish I could have provided really cool victory sequences in my Atari 2600 games. A player who completed the game and collected every treasure should have been rewarded with an amazing animation, but there was never enough memory left over once the game was complete."

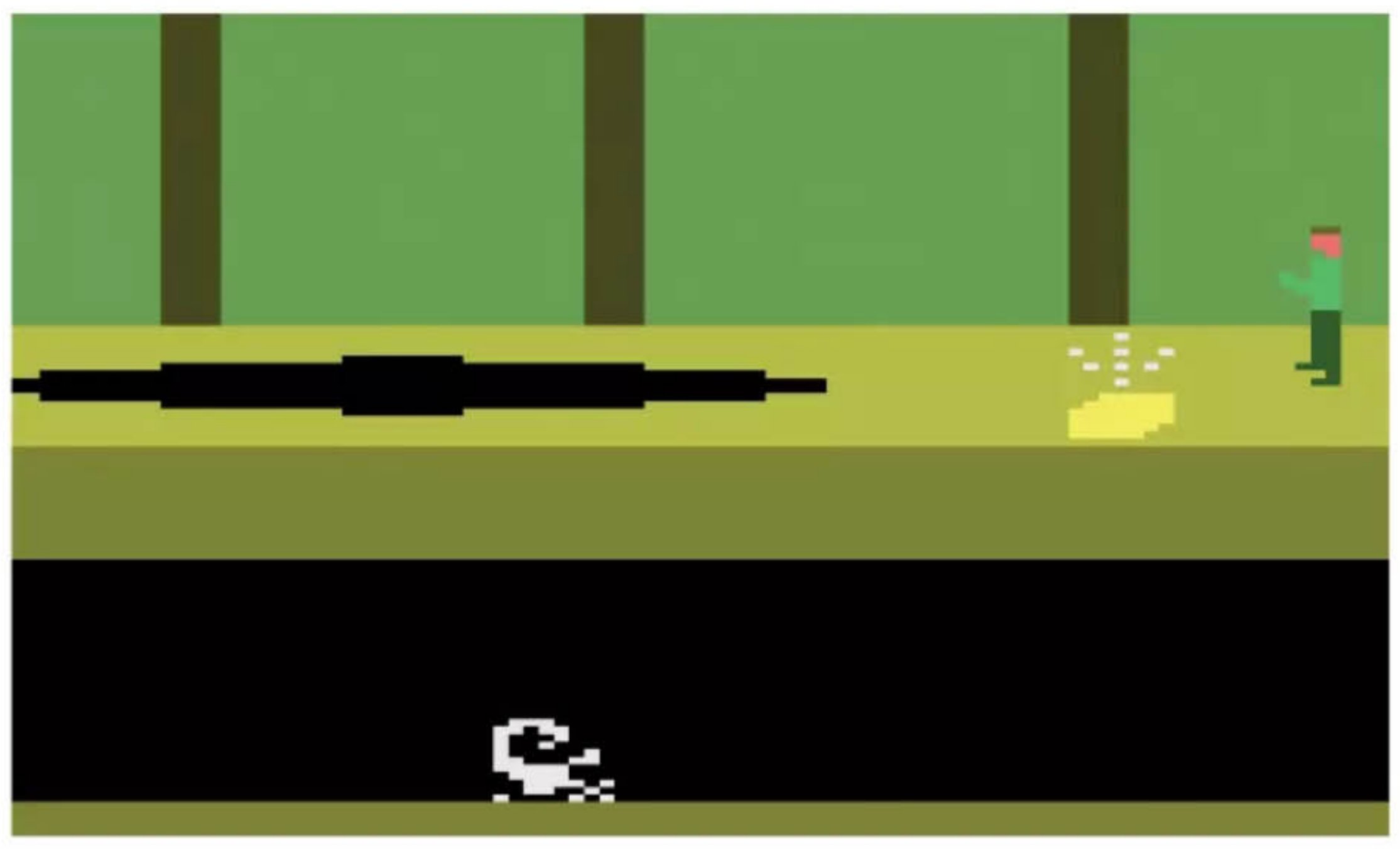
Clearly, such niceties didn't matter to the games-playing public at the time. *Pitfall!* was a resounding success for Activision, meeting with huge critical acclaim. Many gamers were amazed at what their humble Atari console was suddenly capable of, and the result was *Pitfall!* sitting atop the Billboard charts for a massive 64 consecutive weeks, shifting an estimated four million copies. "You can't have success like that and not know you had a hit on your hands," says David, in reaction to us asking whether he always knew *Pitfall!* was something special. "Even early on in development, it was clear that this was a milestone in videogames – the first 'platform' game. It opened complete new worlds of exploration-style games." So, how does it feel to be the one to kick-start a genre, and for others to exploit it so thoroughly over the coming years? "Pitfall! did spawn an entire genre of games: there were more than 600 'platform' games released to the market following Pitfall! – a clear example that imitation is the sincerest form of flattery," mulls David. "But, honestly, that was nothing new in the early days of Activision – there wasn't a single game created in the first five years there that didn't contain an advancement for state-of-the-art videogames. Whether it was a new programming technique, a new graphic feature, or just some new way to make the 2600 perform, every game we released spawned imitations." In fact, David even claims programmers from other companies have since admitted to him that they lifted complete sections of code from Activision games just to be able to compete on the same playing field! "But at the time, there were only a handful of people in the world who knew how difficult it was to make the unique displays in our games," concludes David. "It was like having one's entire working life become one giant puzzle. Fortunately, I like puzzles!"

David may have faced many technically challenges while working on *Pitfall!*, but the hard work and effort was certainly worth it. *Pitfall!* and it's sequel remain two of the most striking platformers on the Atari 2600, and remain that way all these years later.

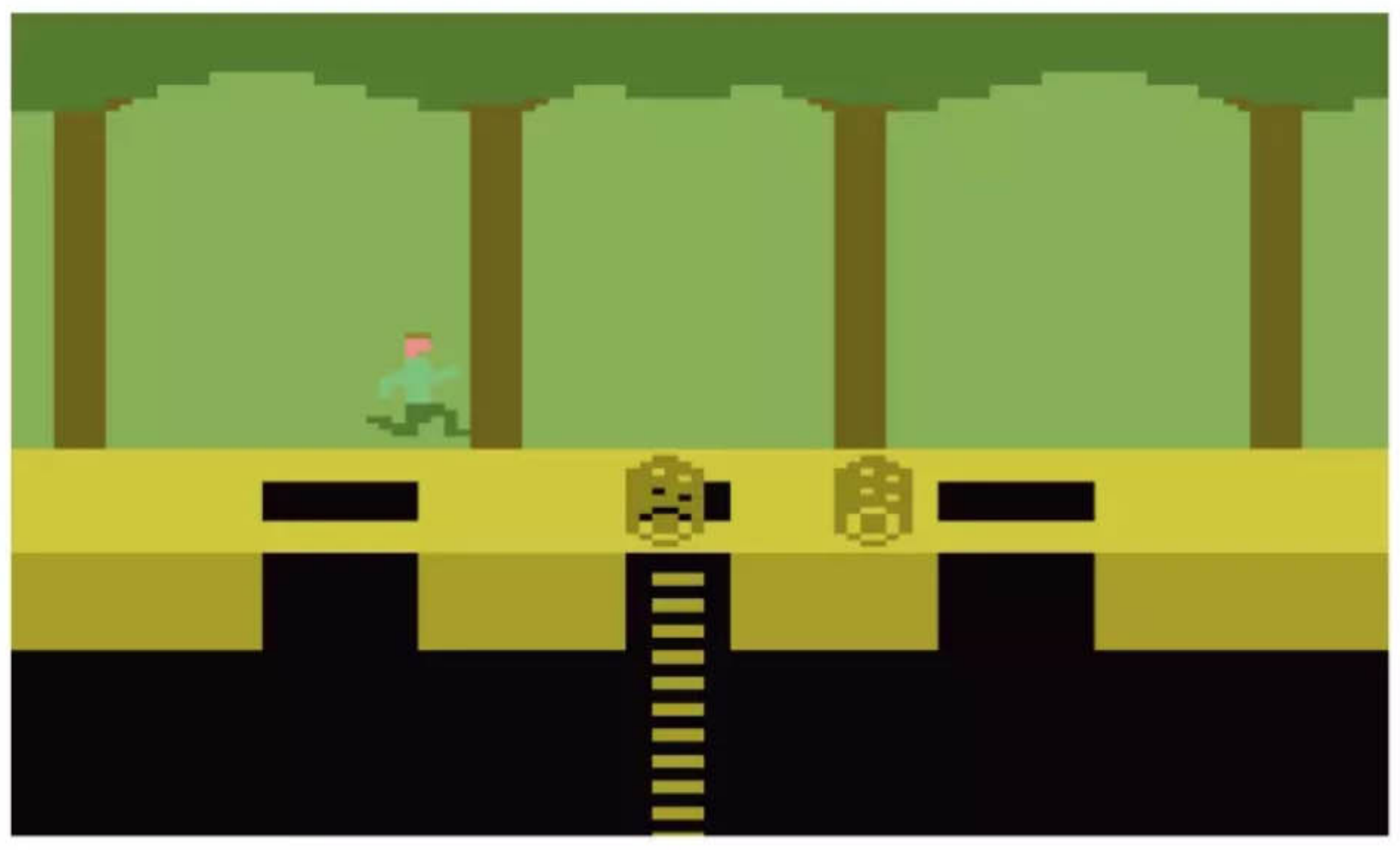
> "IT WAS LIKE HAVING ONE'S ENTIRE WORKING LIFE BECOME ONE GIANT PUZZLE "
>
> DAVID CRANE

DRIVING GAME

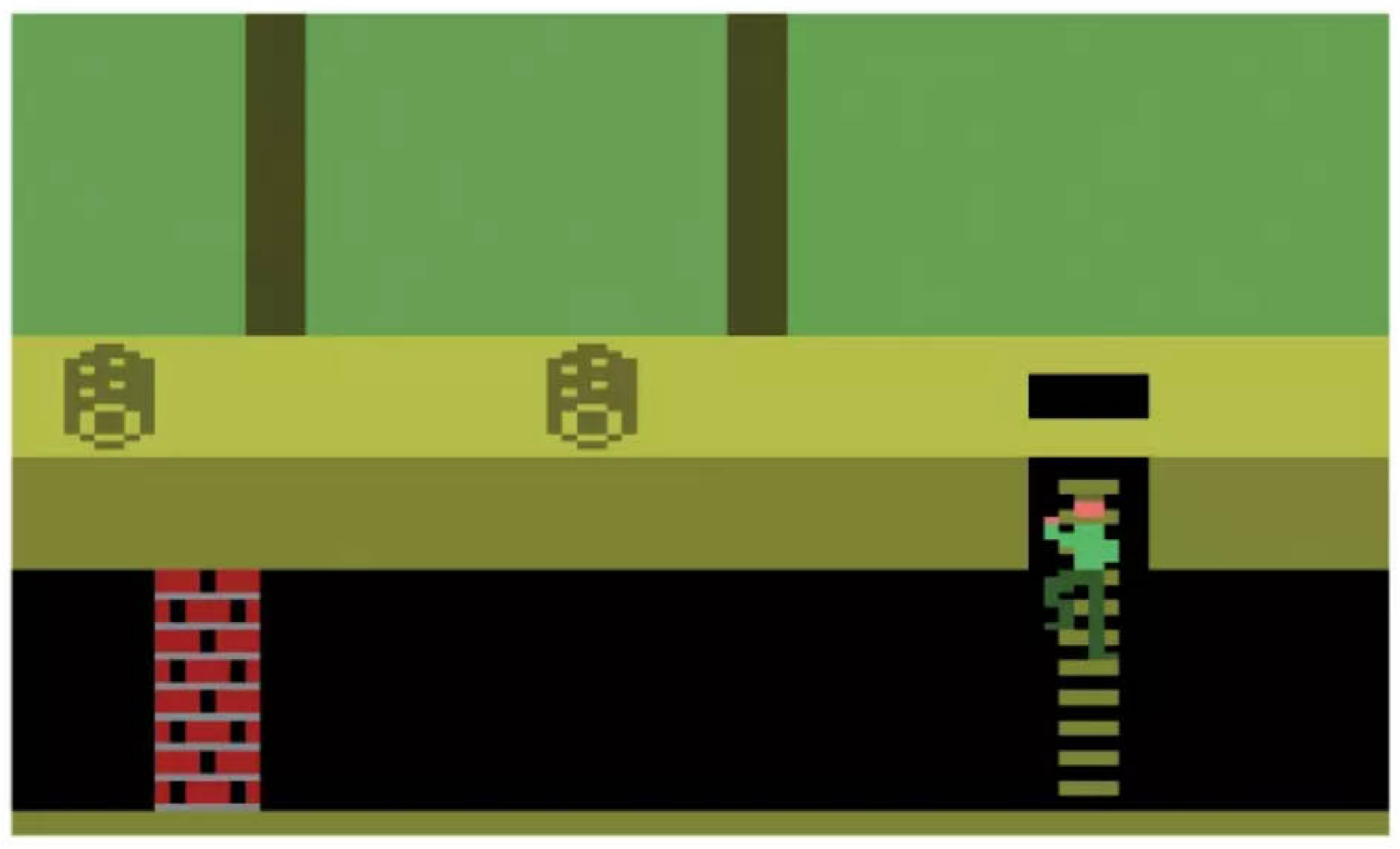
Although primarily tied to the small screen (along with a momentary leap to the arcades, as we'll see next month), Pitfall! has one unique placement in the real world, in the form of David Crane's car number plate. "In 1982, I had just gotten a new car and I was thinking about getting a personalised licence plate," he recalls. "It dawned on me that 'PITFALL' is a seven-letter word, and seven letters was the limit at the time for personalised plates in California." David said that he ran right out to the DMV (Department of Motor Vehicles) and grabbed the plate. "I still use it today, 25 years later," says David, clearly proud of what's turned out to be a smart investment. "And it still gets a few comments, although the most common response is, 'Funny plate… What do you mean it's a videogame?'"



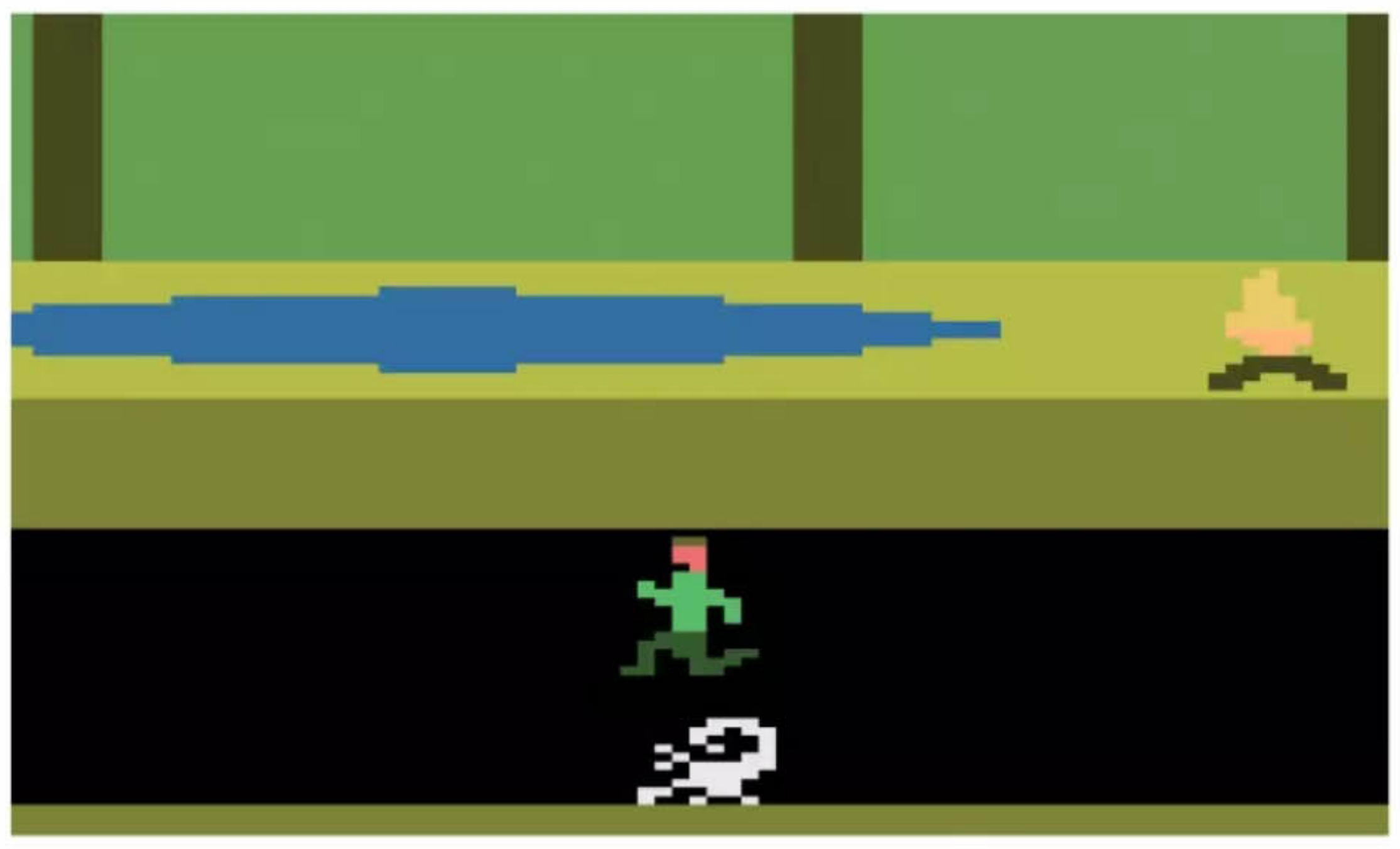
» Harry stared longingly at the huge gold bar, wondering how he would fit it in his pocket.



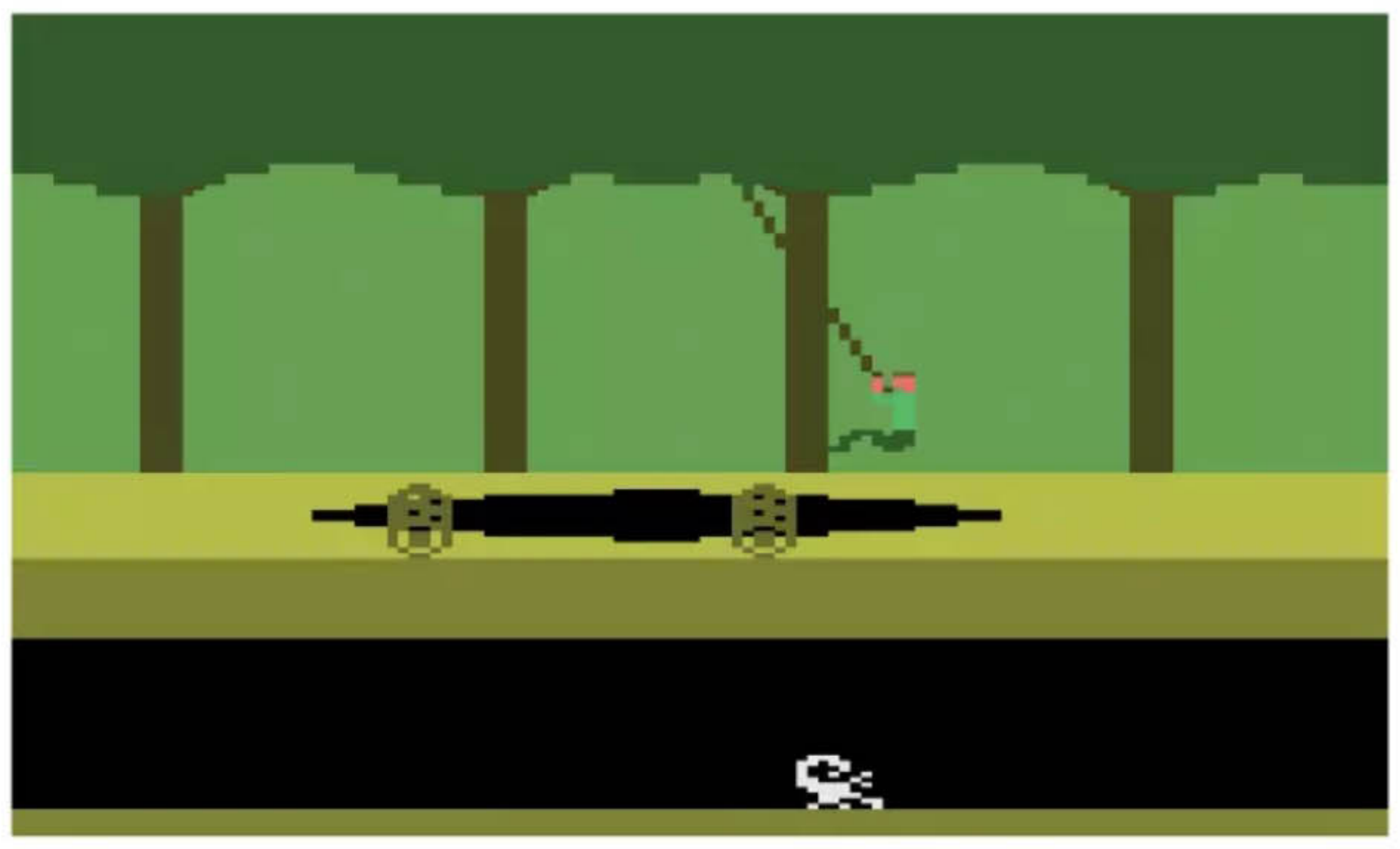
» Harry was just starting his adventure, but he was already getting fed up of constantly jumping over logs..



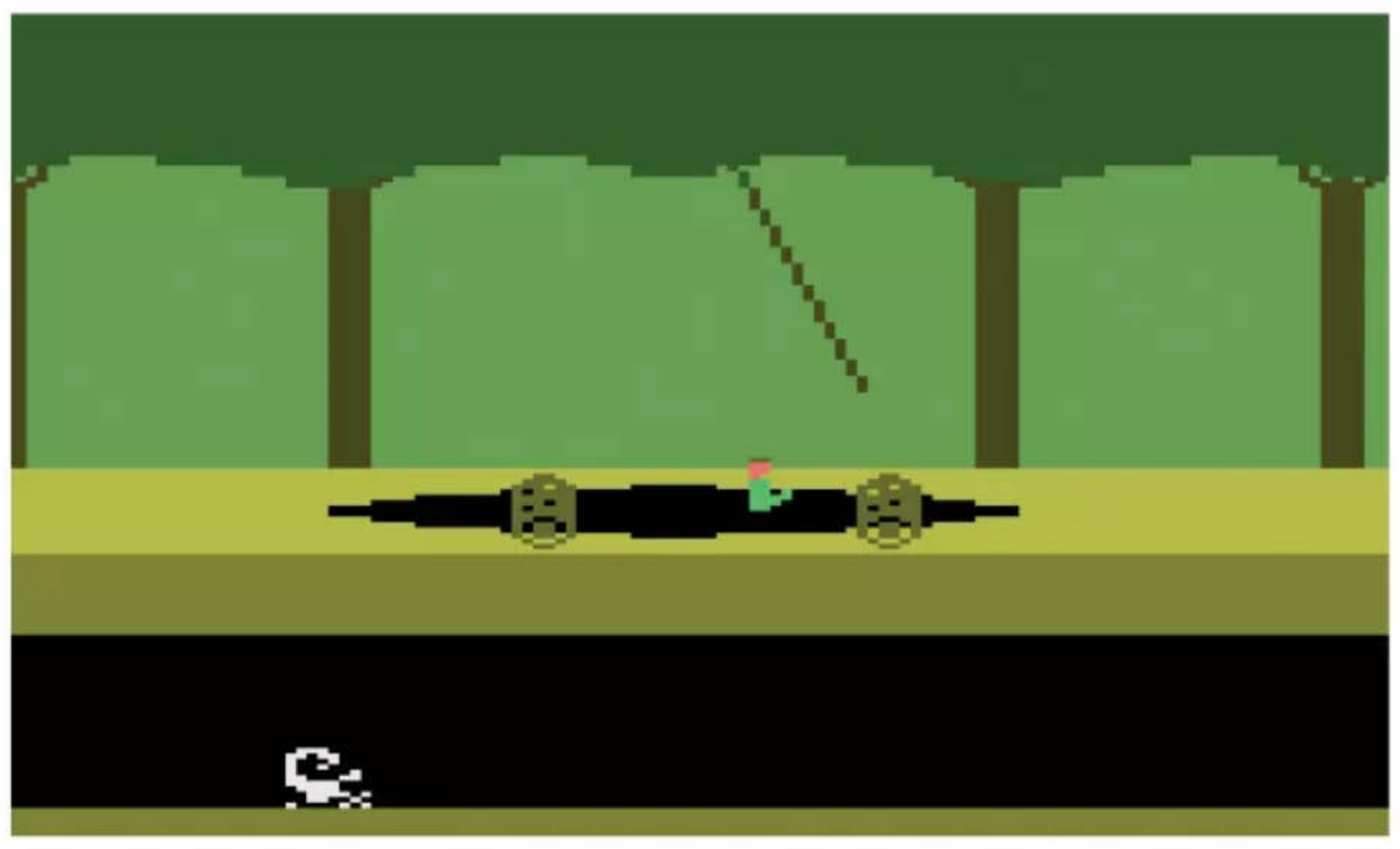
» Harry made a mental note to discover who built the underground tunnel, to avoid using the same interior designer.



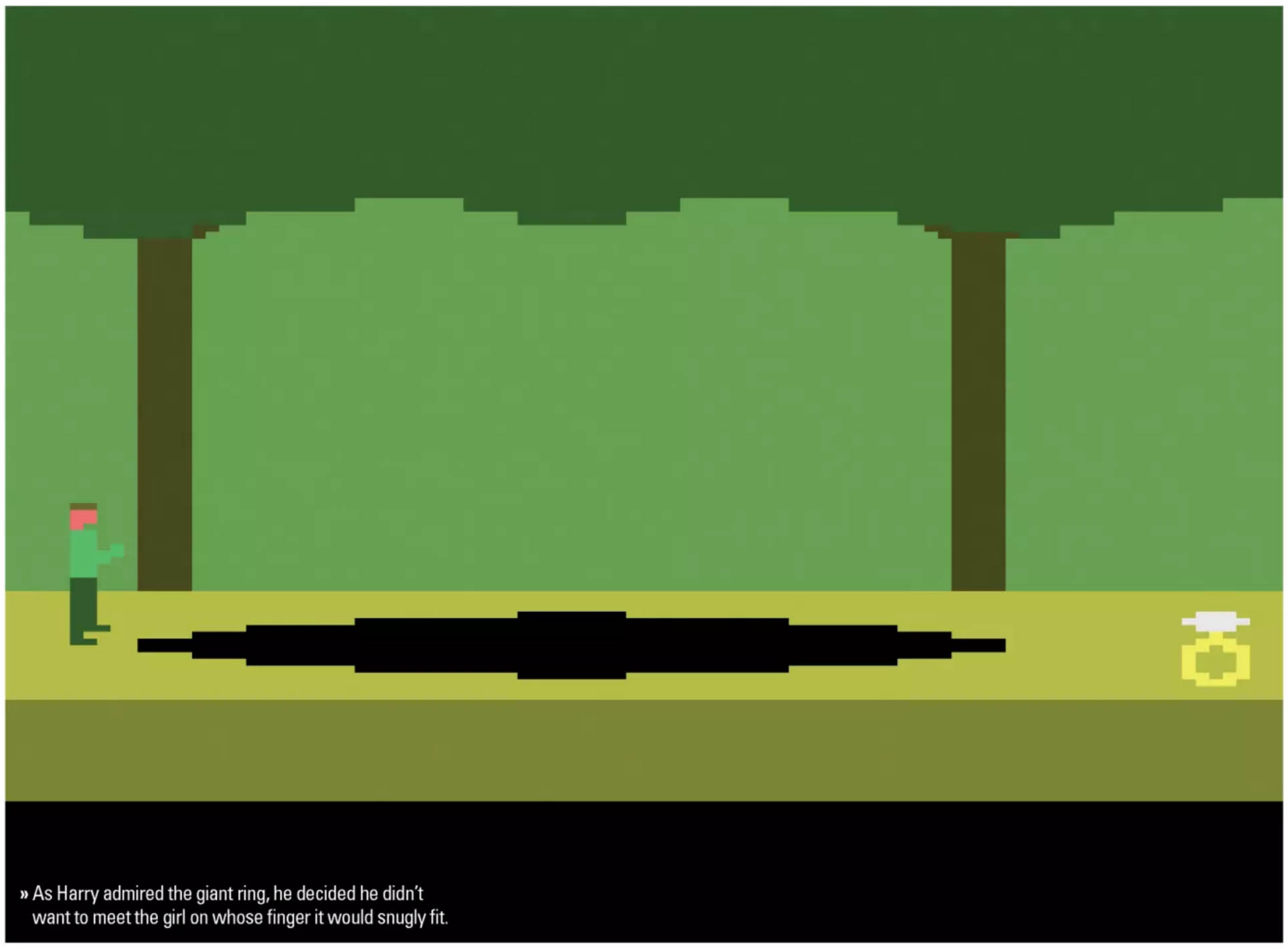
» Majestically leaping over the giant scorpion, Harry regretted not bringing a can of extra-strength bug spray to the jungle.



» With seconds left on the clock, Harry's realised his chance of collecting all the treasure was lower than the underground scorpion breaking into song.



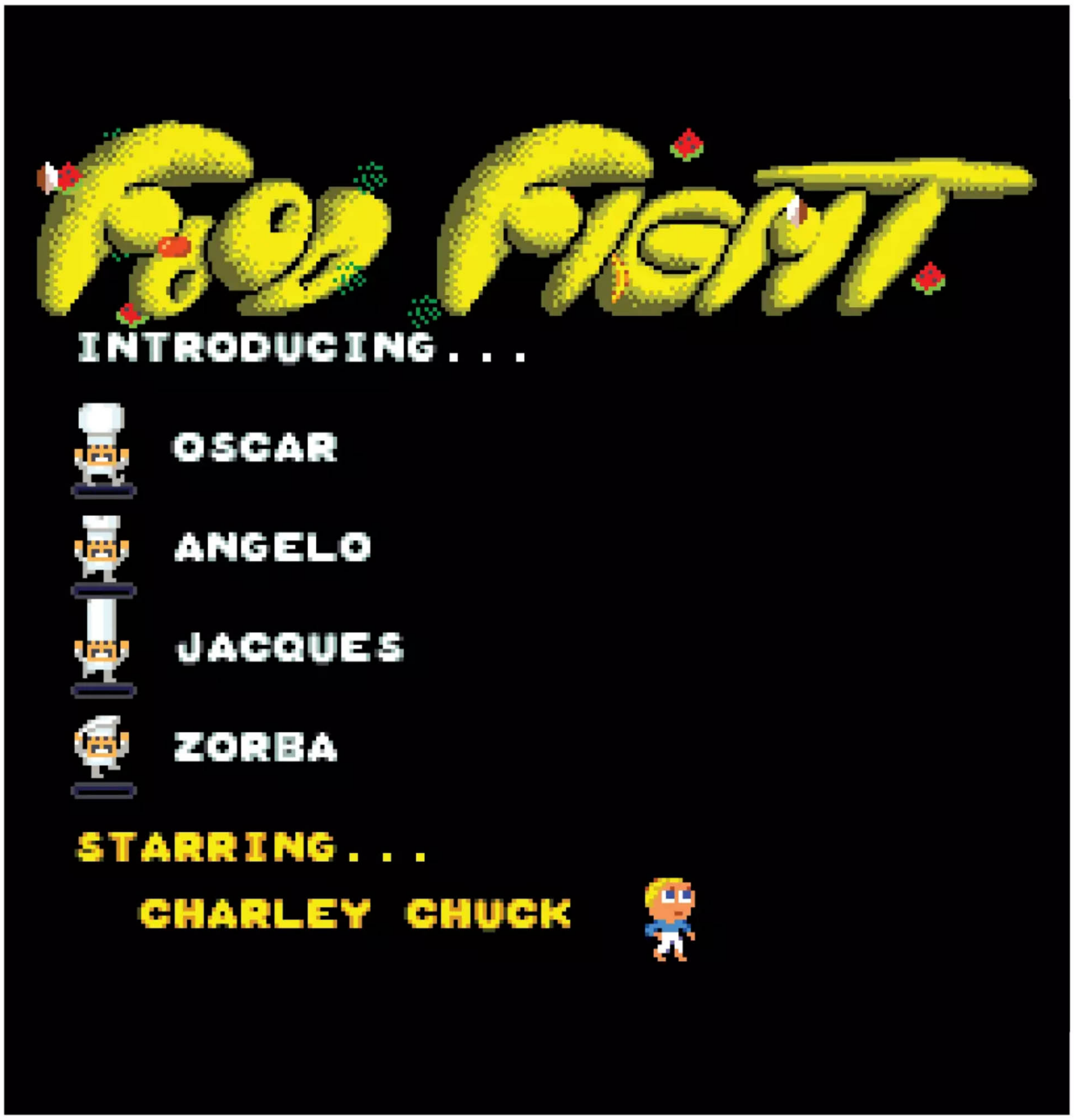
» As Harry fell down the pit, he gained crucial first-hand experience regarding the relevance of the game's name.



» As Harry admired the giant ring, he decided he didn't want to meet the girl on whose finger it would snugly fit.

THE MAKING OF FOOD FIGHT

FOR HIS FIRST COURSE IN THE VIDEOGAMES INDUSTRY, JONATHAN HURD COOKED UP THE QUIRKY FOOD FIGHT, A HIGHLY ORIGINAL AND CHALLENGING TITLE FOR ATARI. PAUL DRURY TAKES A CREAM PIE IN THE FACE



IN THE KNOW

- **Publisher:** Atari
- **Developer:** GCC
- **Platform:** Arcade
- **Year released:** 1983
- **Genre:** Food Flinging

When you land your first job in the videogame business, you know you'll have to muck in around the office. Making tea, answering phones, running errands… applying lipstick?
Yes, I helped put the touches on Ms Pac-Man's lips," laughs Jonathan Hurd. "It was my first day at GCC and the guys were feverishly trying to finish up the game. I asked if I could help and Mike Horowitz said, 'Yeah, her lips look a bit funny. Can you fix them?' So I tried a couple of things, a pixel here and a pixel there…" Pac-Man's sweetheart left the building looking fabulous and Jonathan had made his first little contribution to the success of his new employer. He'd joined the firm just before Christmas 1981, leaving behind the software developer position he had held at a strategic consulting company since graduating from MIT, and became GCC's ninth employee. He already knew one of his bosses, Kevin Curran, having previously hired him as an intern at his last job, and Jonathan was delighted when he was given a very clear brief. "Kevin said, 'Design a videogame, we'll build it and we'll all get rich!'" Jonathan chuckles. "Making videogames for a guy in his early twenties who'd grown up with pinball… what could be better?"

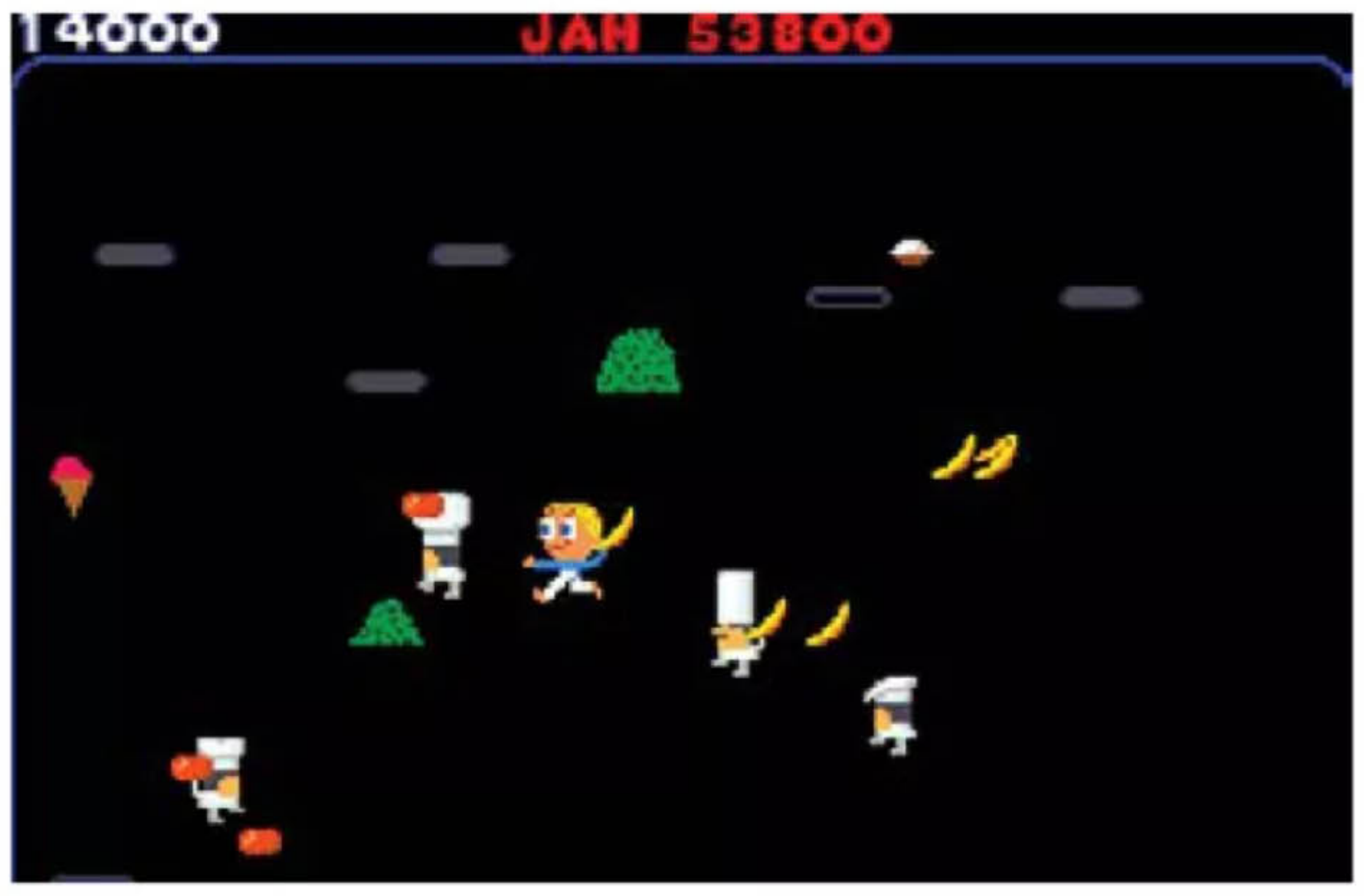
Jonathan spent the holidays mulling over ideas for his entrée into the world of game design. He wanted to create something original, approachable and non-violent, so pondered what else a button on an arcade cabinet could do apart from 'fire'. As a lifelong baseball fan he settled on 'throw', but throw what? A childhood watching Three Stooges movies may have helped him come up with the answer. "Food!" exclaims Jonathan. "As soon as I had the idea for Food Fight I knew it was a great name and a great concept… and I knew I had to make it quickly before someone else did!"

So Jonathan arrived back at work on 4 January 1982 with a design document ready to run past his bosses for approval. The game's premise was simple: cheeky chap Charley Chuck would begin each level on the right of the screen, determined to consume a tempting ice-cream cone situated on the left. Between him and his sweet treat were four maniacal chefs and numerous manholes to negotiate. The original idea was to have cream pies piled up on tables for Charley to chuck at his adversaries, but this added to on-screen clutter and required our hungry hero to keep returning to the tables to stock up on edible ammunition. Instead, piles of food would be strewn across the playfield, ready to be hurled at the angry cooks, who could retaliate in kind with well-aimed tomatoes, bananas and pies. Add in a strict time limit – the ice cream melts if you don't gobble it down within 30 seconds – and you have a delicious blend of Robotron's pace and claustrophobia with a strategic element and sense of humour all of its own.

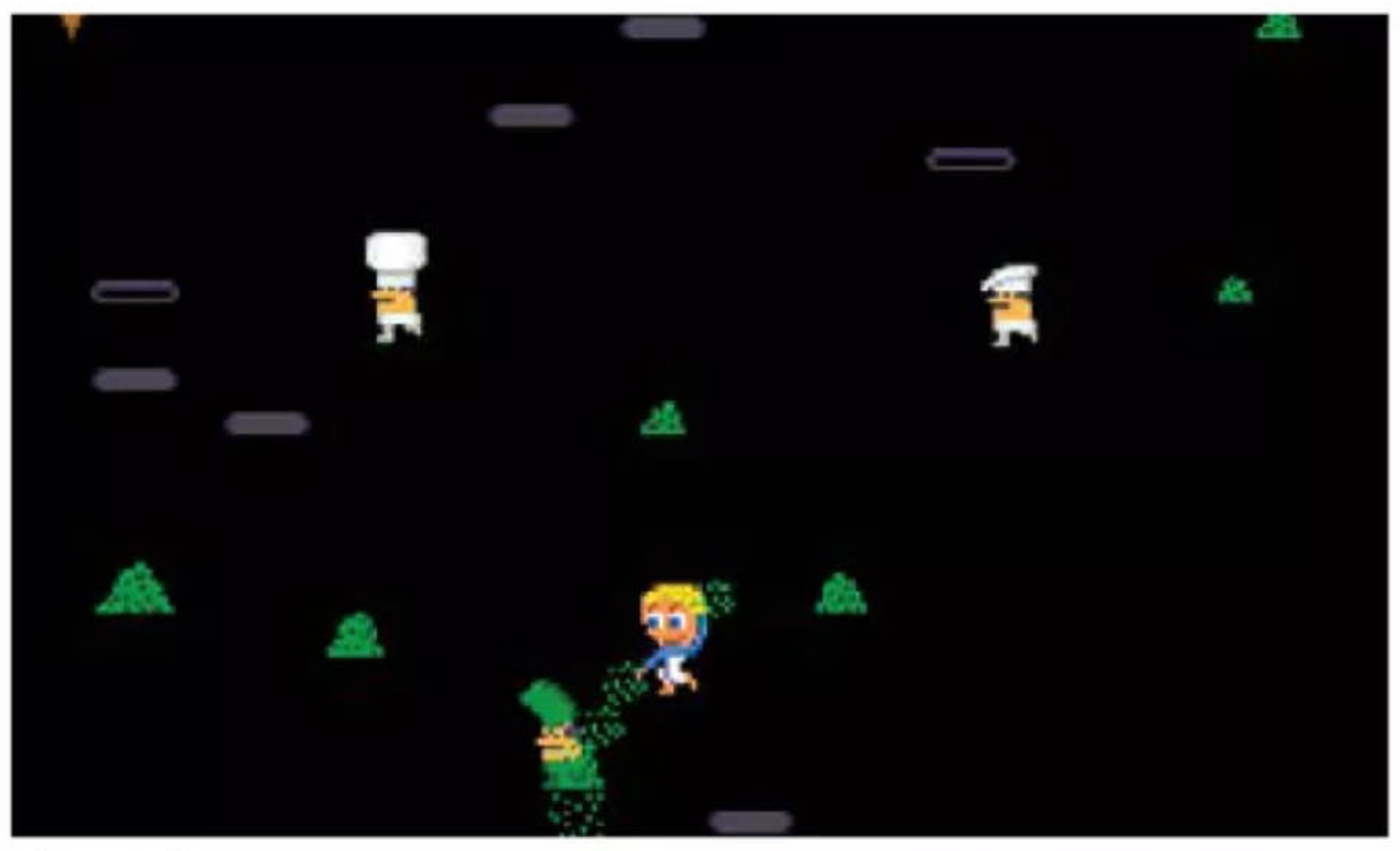
> "MY BOSS SAID, DESIGN A VIDEOGAME, WE'LL BUILD IT AND WE'LL ALL GET RICH!"
> JONATHAN HURD

Challenging chefs

Much of the game's distinctive look comes from the memorable characters that stand between you and success. The four chefs, identified by their differing headwear, have their own personalities. Frenchman Jacques runs to a point slightly in front of you while Zorba, the Greek, heads to a position just behind you in a clever skewer manoeuvre. The American Oscar inconveniently positions himself between you and your ever-melting goal and Angelo the Italian, embodying the fiery Latin temperament, charges straight for you, presumably to accuse you of disrespecting his family. Was Jonathan consciously playing on national stereotypes here, we wonder? "Not at all," he assures us. "That's something I'm a bit sensitive to. Honestly, the chefs' movements weren't at all suggested by nationalities. It was more that I was thinking that the best food doesn't necessarily come from the States!"



» [Arcade] Jonathan was inspired by old Laurel and Hardy and Three Stooges movies when coming up with the idea for his food-flinging debut.



» [Arcade] The games is best played on an original cabinet with an analogue joystick – ACAM at Funspot, NH, has one.

Knowing the individual quirks of your culinary foes is crucial for achieving high scores. At the beginning of each stage, you are given a second before the action begins to mentally plan your route. Should you make a desperate dash straight for the cone or head to that pile of bananas and take out one or two of the chefs to give you a clearer run? Food Fight requires lightning-fast reactions, both mental and physical, and levels can take under six seconds to complete. "At higher levels, it takes about a second," adds Jonathan. "The game turns into something completely different. It's totally reactive. If you're trying to set a high score and playing endless racks at level 125, it becomes a really intense experience. It saps your energy but you feel like you've really accomplished something."

With levels becoming a blur of flying food and over in the blink of a soufflé, it's easy to miss some of the subtleties required to weave your way to the ice cream. Fortunately, Jonathan included a unique feature so you could properly digest your dexterity: the instant replay. Realising he had about half of the 8K of RAM the game board contained left unused, he figured out how to store the state of the joystick and throw button and accurately recreate the level just played.

"At first I made the replay happen at random," he explains, "but that meant if a level wasn't exciting, it felt like an intrusion. I tweaked it so it only happens if a chef and some flying food almost hit you. You have to have survived at least one close shave."

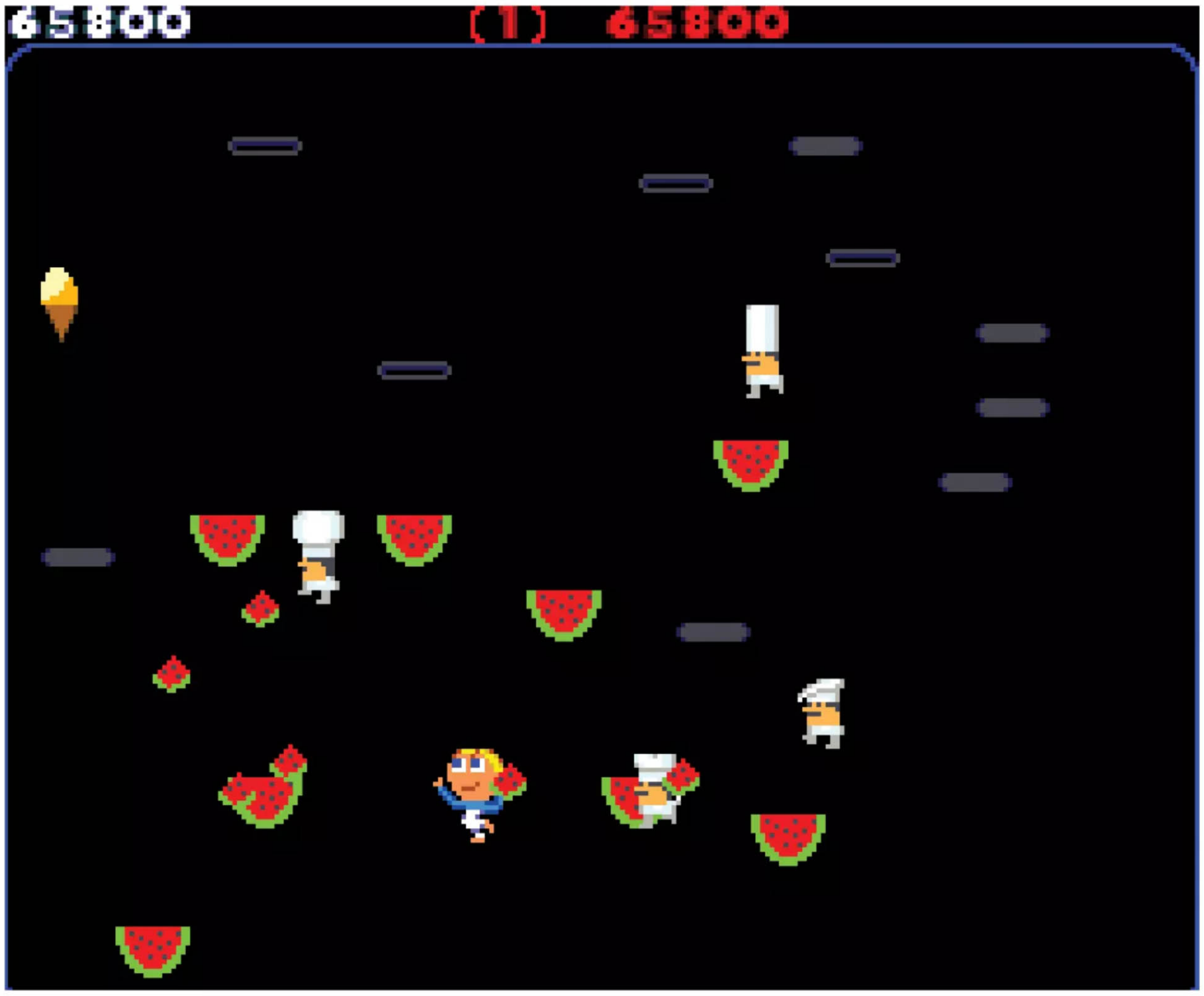
Triggering a replay therefore feels like a real achievement, especially as it's accompanied by a triumphant victory tune. The ditty, composed by Patty Goodson, has eight different versions so it fits exactly with the length of the replay, one of the many lovely touches you'll find throughout Food Fight. You can't help but smile when poor Charley gets plastered by all the remaining food on a level when he dies and at the way his head expands and tongue protrudes greedily as he scoffs the ice cream cone. "I actually toned down the tongue," sniggers Jonathan. "The original version was far more outrageous. His tongue went way further out and everyone in the lab was like, 'That's just too much!' "Although Jonathan was lead designer and software developer for the game, he was constantly integrating feedback from others. As well as assembling a talented team of sous chefs to help cook up the game [see 'Fabulous Food Flingers' boxout on page 49], the collaborative ethos and physical environment at GCC allowed everyone to add ingredients to the mix. "It was a wonderful atmosphere," he smiles. "The layout of the place helped. We all had our own office to think and write complicated code and then there was a lab in the centre – a giant open space where all our prototype games could be loaded up. Others could stop and play it, give feedback, make suggestions… the challenge for

» Jonathan Hurd (centre) conducts a meeting at GCC with fellow staffers (clockwise) Paul Moody, Alan Hodgkinson, Roland Janbergs, Betty Ryan (Tylko), Patty Goodson, Darrell Myers, Keith Sawyer & Mike Feinstein.

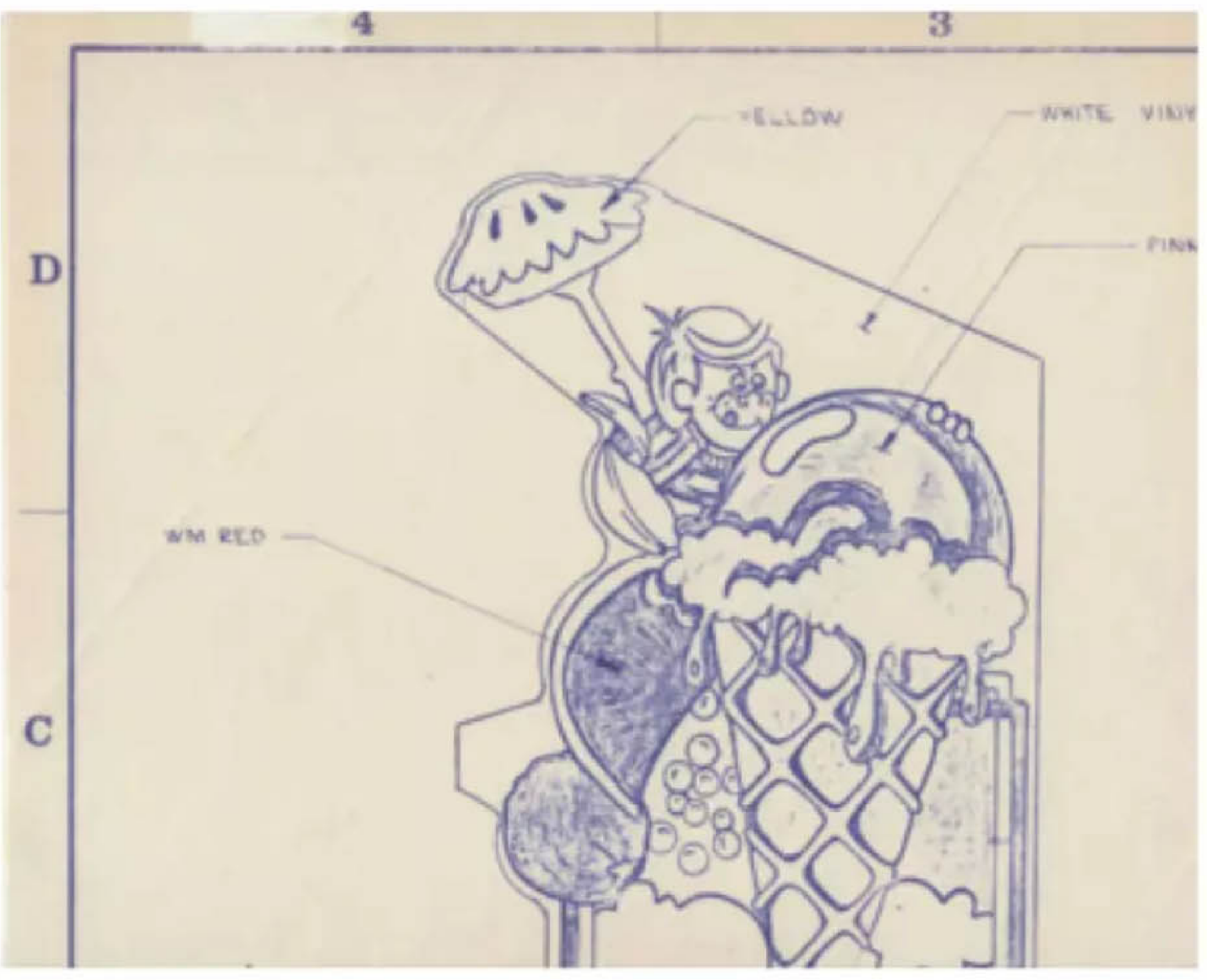
FABULOUS FOOD FLINGERS

Though Food Fight was very much made to Jonathan's recipe, he is quick to acknowledge all the other GCC team members who added ingredients and many of the key contributors were credited within the high score table. TW is Tom Westerberg, who designed the game's ground-breaking hardware, RBJ is Roland Janbergs, responsible for a lot of the code, especially for the early prototypes, and PRG is in-house musician Patty Goodson, the woman behind the memorable instant replay music. Topping the table is of course JAH and Jonathan couldn't resist adding a little panache to his own entry. "If you enter seven backspaces followed by JAH when you get a high score, my monogram, rather than my initials, will appear," he reveals. Well, you'd expect a game about food to have at least one Easter Egg, wouldn't you?

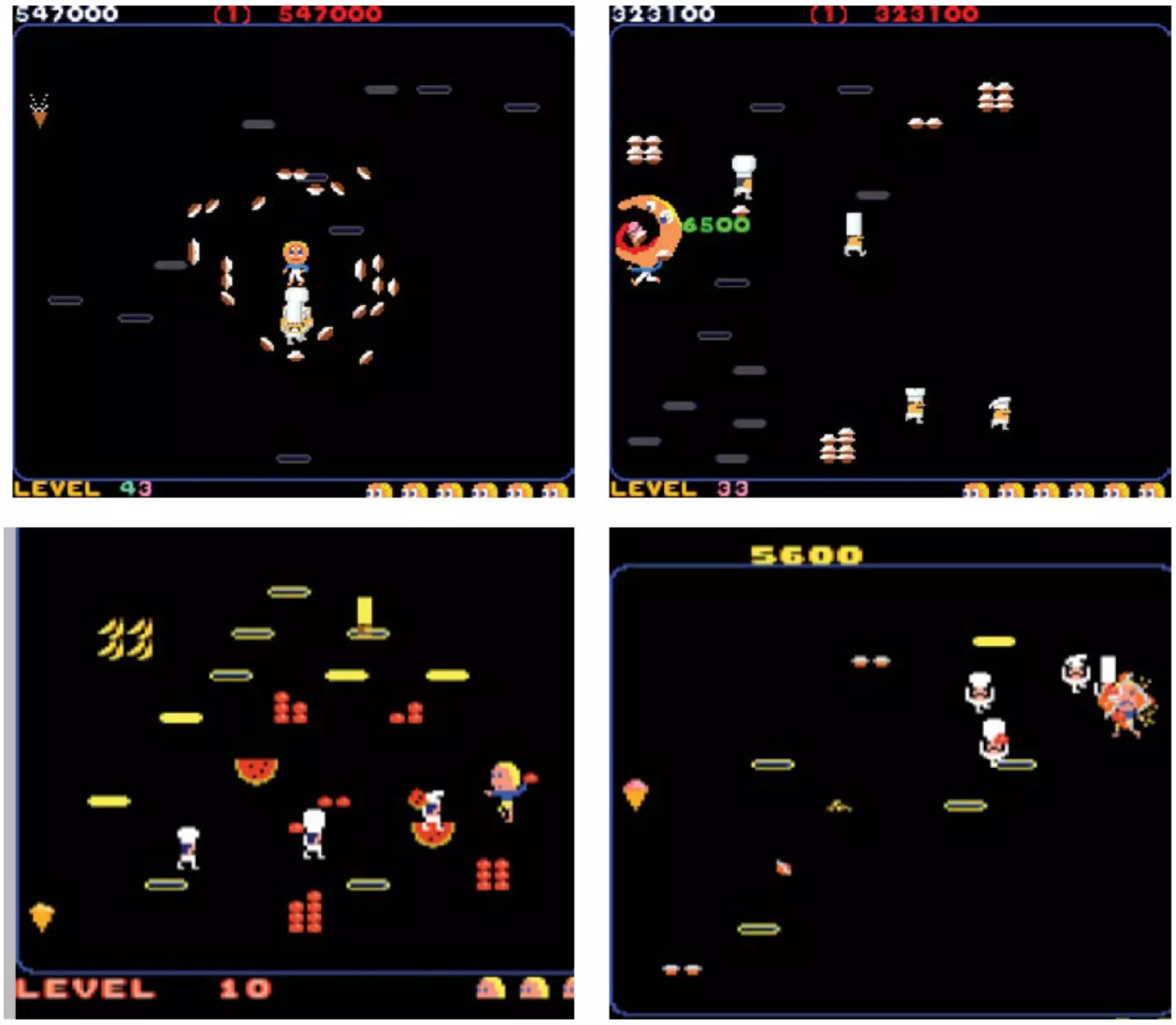
» The GCC team - anywhere with a fireman's pole has to be a fun place to work



» [Arcade] The action in *Food Fight* becomes incredibly hectic – higher levels can be over in a matter of seconds.



» The striking side art for Food Fight at its design stage



» [Atari 7800] It's a shame *Food Fight* wasn't converted to more platforms, as the Atari 7800 version shows how well it can work outside of the arcade.

me was to keep true to what made the gameplay good but incorporate all the great ideas that came in."

The creative process was helped by the powerful technology pioneered by the game. Though the first version of Food Fight from 1982 used Pac-man hardware, development soon moved onto a new, cutting-edge setup. Built around the 16-bit Motorola 68000 chip, the board boasted 64K of RAM, 8K of ROM and could handle 32 sprites, essential for the on-screen action. The development environment comprised four linked Tektronix workstations which could run multiple game prototypes, at a whopping $144,000.

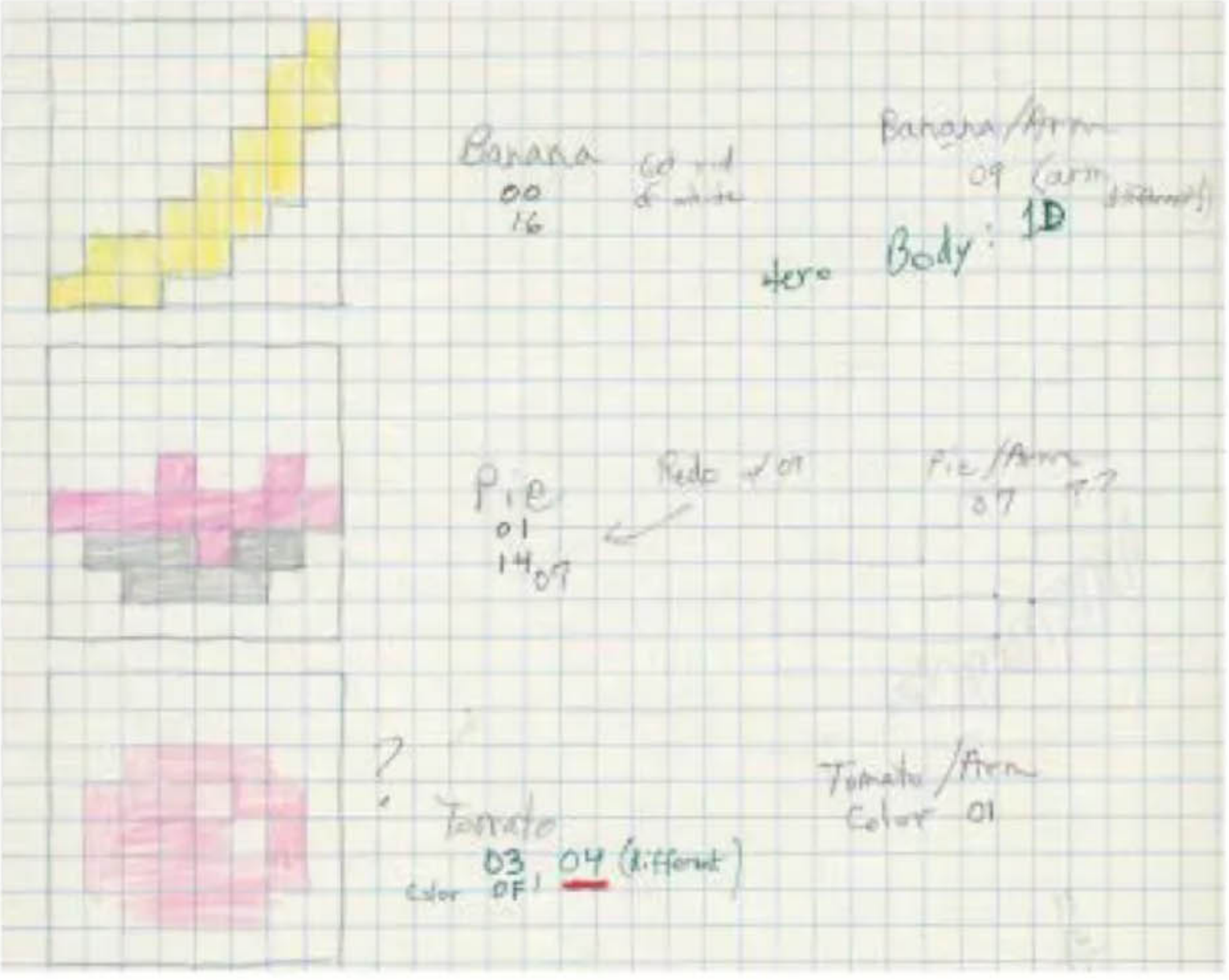
GCC had invested big money in becoming a leading game developer and though the revenue from Ms Pac-man obviously helped, so did the $50,000 a month it was receiving from Atari, according to Steven Kent in his Ultimate History of Videogames. This arrangement came from a settlement between the two – Atari had initially sued GCC for its Missile Command hack Super Missile Attack but ended up paying GCC to develop both arcade and console games – and with Atari all set to manufacture Food Fight, Jonathan naturally started experimenting with Atari's existing controllers.

Tricky controls

"Deciding on the controls was the biggest challenge and ultimately the biggest problem," he sighs. "A standard Pac-man joystick didn't give us enough positions for throwing the food, so we tried using a knob and even considered a trackball. In the end, we went with an analogue joystick similar to Red Baron. It meant you could throw in one of 72 directions, either when you were moving or standing still, which was useful if you were on the infinite pile of watermelons! At one point, I even filled a plastic banana with epoxy and used that as a joystick, which looked cool in the arcade tests but it broke when the first player gave it a good shove…"

A banana controller sounds especially appealing and would've predated Monkey Ball's fruity stick by almost two decades. The flexibility the analogue controller gave players was exceptional, particularly given that each foodstuff had its own characteristics (the peas

> "I FILLED A PLASTIC BANANA WITH EPOXY AND USED THAT AS A JOYSTICK…"
>
> JONATHAN HURD



» Some of Jonathan's early sprite designs for the foodstuffs in the game.

can't be flung far but have a broad spread, for example, whereas tomatoes are the go-to fruit for long-range attacks), but sadly joystick reliability problems affected the game's reception in arcades. Worse still, the game was released in 1983, just as the infamous videogame crash was starting to bite. "The traffic in arcades was really dropping off," laments Jonathan. "I think we sold 2,500 units and a few hundred of those were cocktail cabinets. It was a very limited production. Sure, it would've been great if it had come out at a different time, but I was very pleased with the final game…"

And so he should be. Food Fight is a beautifully balanced game, full of wit and polish, offering a wealth of tactical approaches to its escalating challenge. It was also the first arcade game to use a 16-bit processor and to be written predominantly in a high-level language, C. Instant replays and the anti-aliasing used to soften the edges of the in-game text were also new in 1983.

So, plenty of firsts but also a last. After its release, Jonathan provided his source code for Keith Sawyer to do a great job converting Food Fight for the Atari 7800 and oversaw the production of Jr Pac-Man and the unreleased Nightmare, but never designed another videogame after his debut. "The videogame industry fell into such a trough, it was hard to imagine making videogames as a career. I feel extremely lucky to have been there at the right time, to be given that job by the founders of GCC and to have been given their trust, a guy who'd never made a game before… and I loved it."

Jonathan left GCC in 1984 but remained involved with technology, albeit not videogames; the last two decades he's been a strategy consultant for a media and telecommunications firm. We can't help wondering if he's thought about revisiting his signature dish?

"It's not out of the question," he muses. "I loved writing software and I thought a really cool sequel would have two players simultaneously, one on each side, each heading to their cone on the other side, fighting off the chefs and each other to get to their ice cream first. Maybe it's something I'll do when I retire!" That's certainly a mouth-watering prospect…

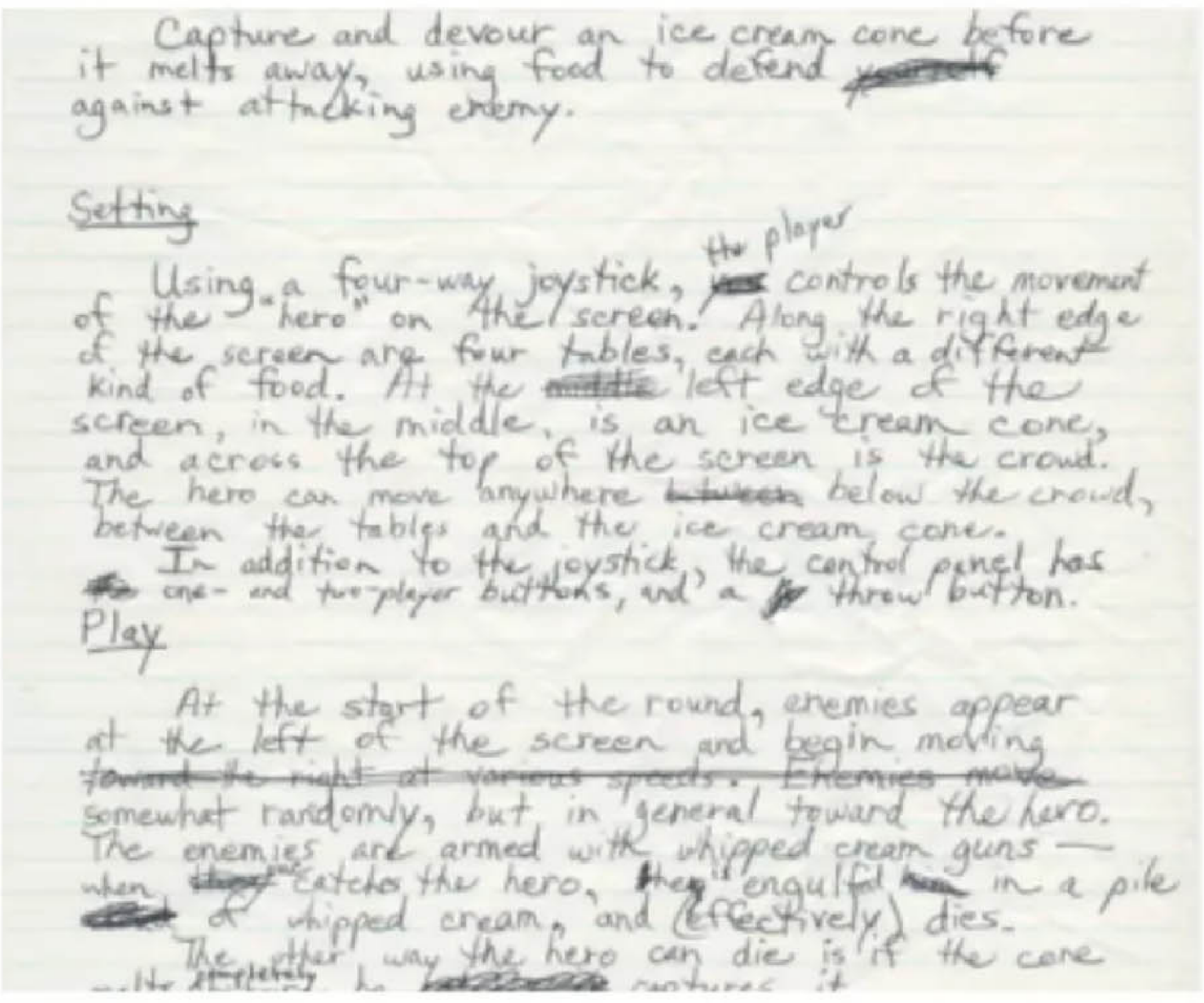
Many thanks to Mike Stulir at ACAM for the introduction and Jonathan and Martyn for the great images.

DEVELOPER HIGHLIGHTS

Super Missile Attack
System: Arcade
Year: 1981

Ms Pac-Man
System: Arcade
Year: 1981

Jr Pac-Man
System: Arcade
Year: 1983



Capture and devour an ice cream cone before it melts away, using food to defend [illegible] against attacking enemy.

Setting

Using a four-way joystick, the player controls the movement of the "hero" on the screen. Along the right edge of the screen are four tables, each with a different kind of food. At the ~~middle~~ left edge of the screen, in the middle, is an ice cream cone, and across the top of the screen is the crowd. The hero can move anywhere ~~between~~ below the crowd, between the tables and the ice cream cone.

In addition to the joystick, the control panel has one- and two-player buttons, and a throw button.

Play

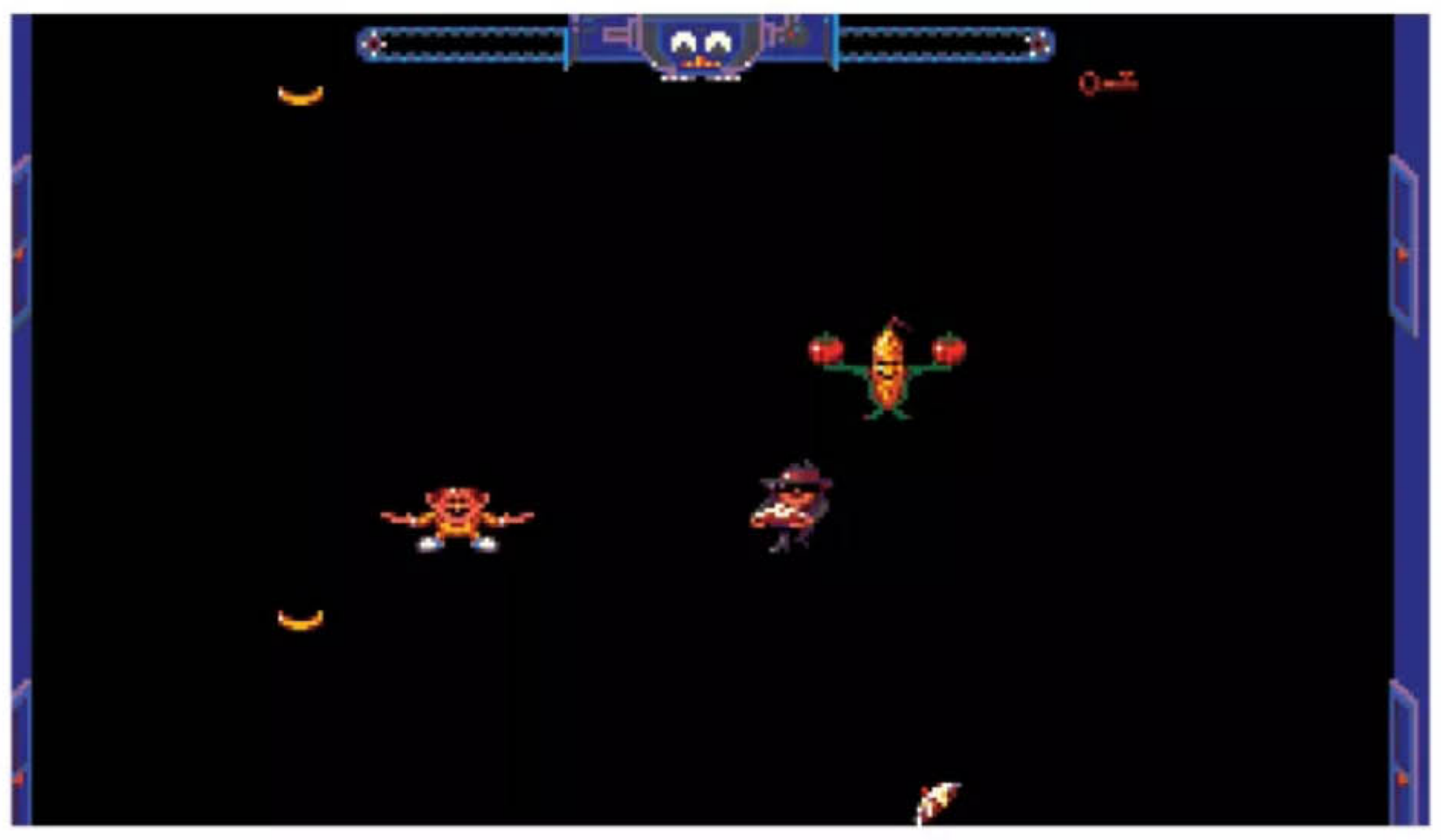
At the start of the round, enemies appear at the left of the screen and begin moving ~~toward the right at various speeds. Enemies move~~ somewhat randomly, but in general toward the hero. The enemies are armed with whipped cream guns — when one catches the hero, they engulf in a pile of whipped cream, and (effectively) dies.

The other way the hero can die is if the cone

» The original handwritten game design proposal for *Food Fight* from January 1982.

DON'T PLAY WITH YOUR FOOD

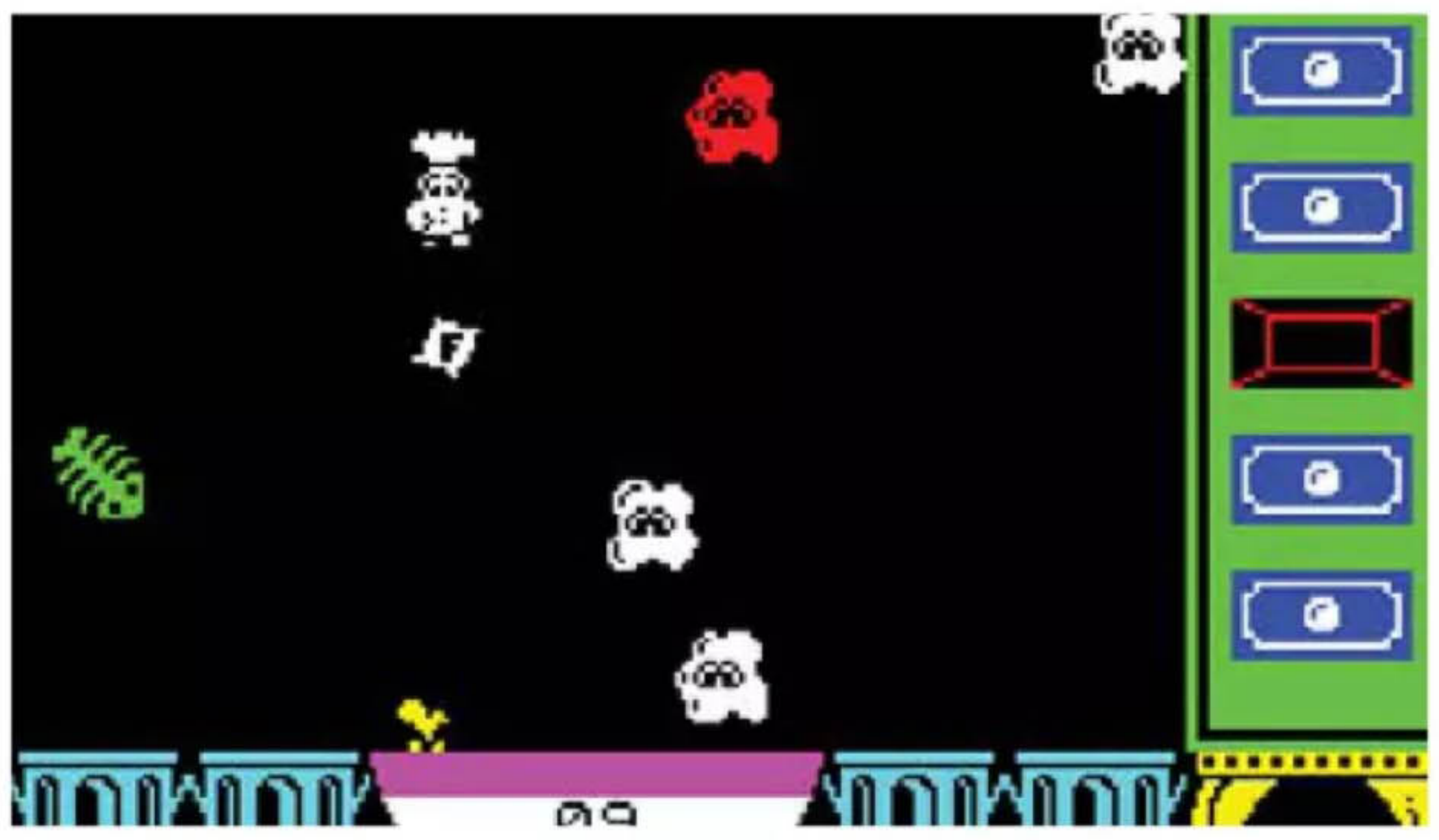
HERE ARE FIVE MORE FOOD-FILLED GAMES TO SINK YOUR TEETH INTO



SPLAT!

Year released: 1982

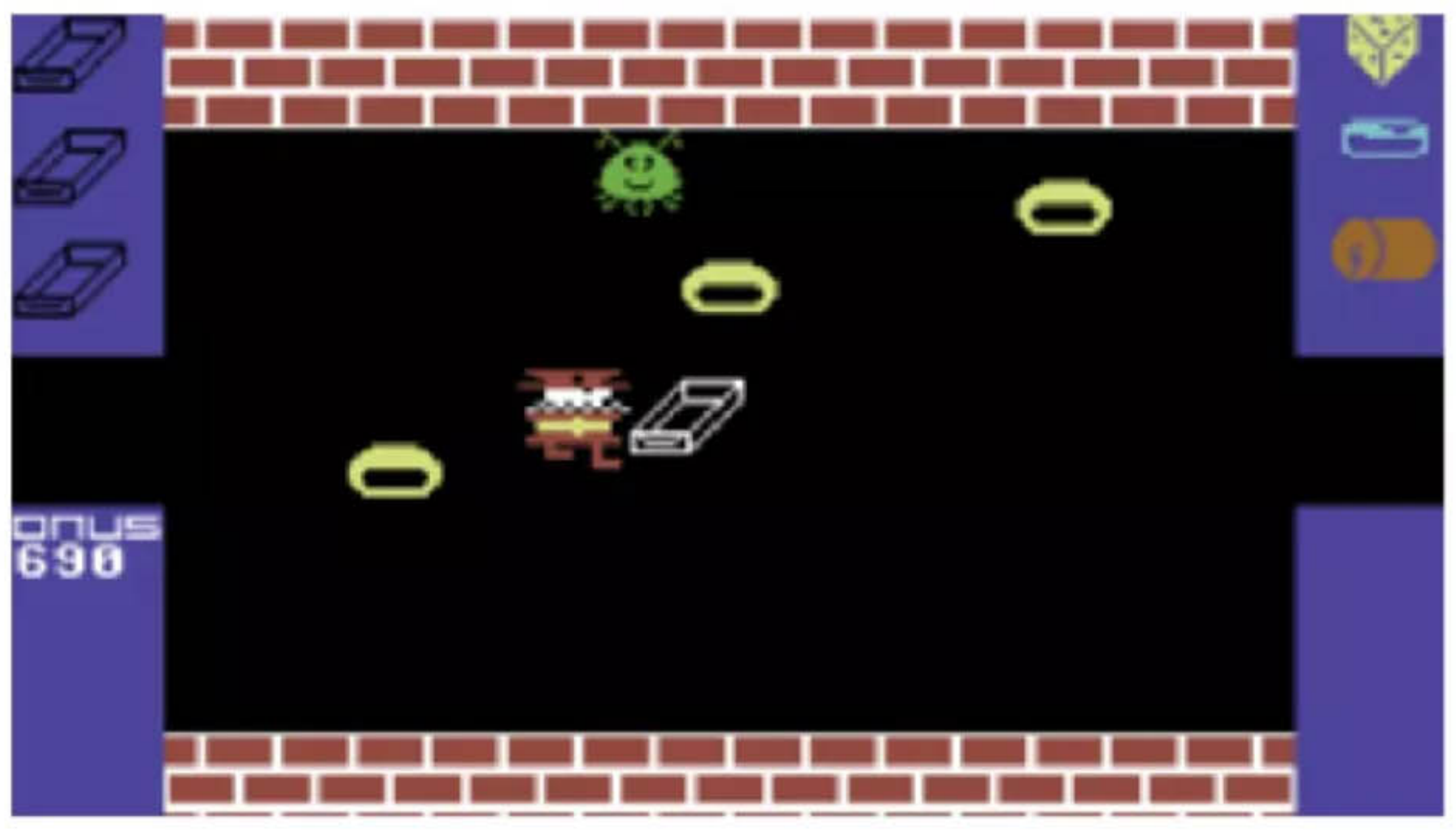
After the fairly leftfield Joust, John Newcomer designed this decidedly odd coin-op, which featured bizarre pie-flinging duels and frequent decapitation.



COOKIE

Year released: 1983

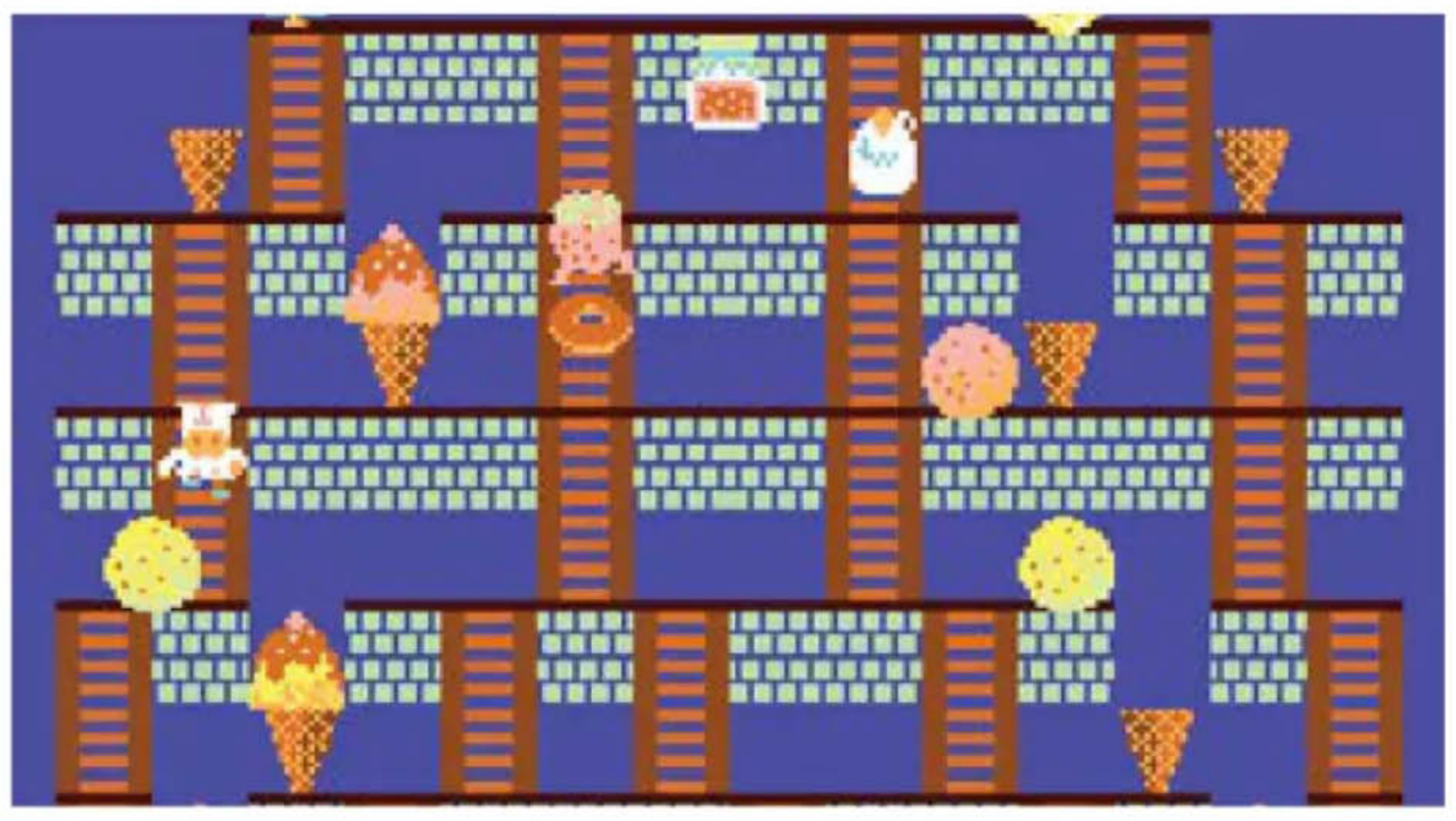
One of Ultimate Play the Game's early Spectrum titles, this had the firm's trademark originality in a kitchen nightmare that Gordon Ramsay would be proud of.



MR WIMPY

Year released: 1984

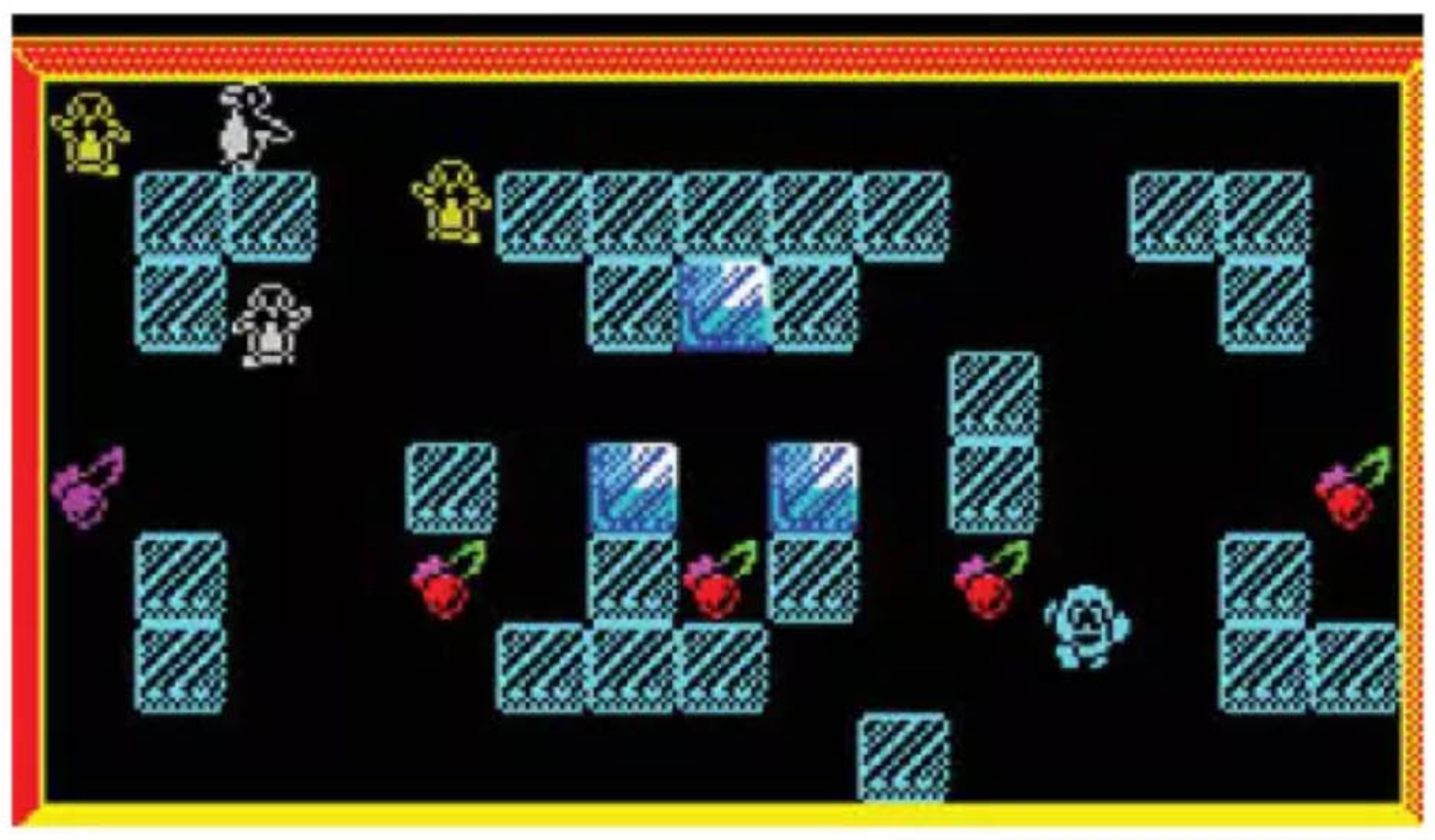
A BurgerTime clone that offered a laborious opening screen and, ironically for a license based on a faded fast food chain, painfully slow beef-trampling action.



PETER PEPPER'S ICE CREAM FACTORY

Year released: 1984

A sequel to BurgerTime, it has Peter hurling scoops of ice cream like he's a dairy-obsessed dung beetle.



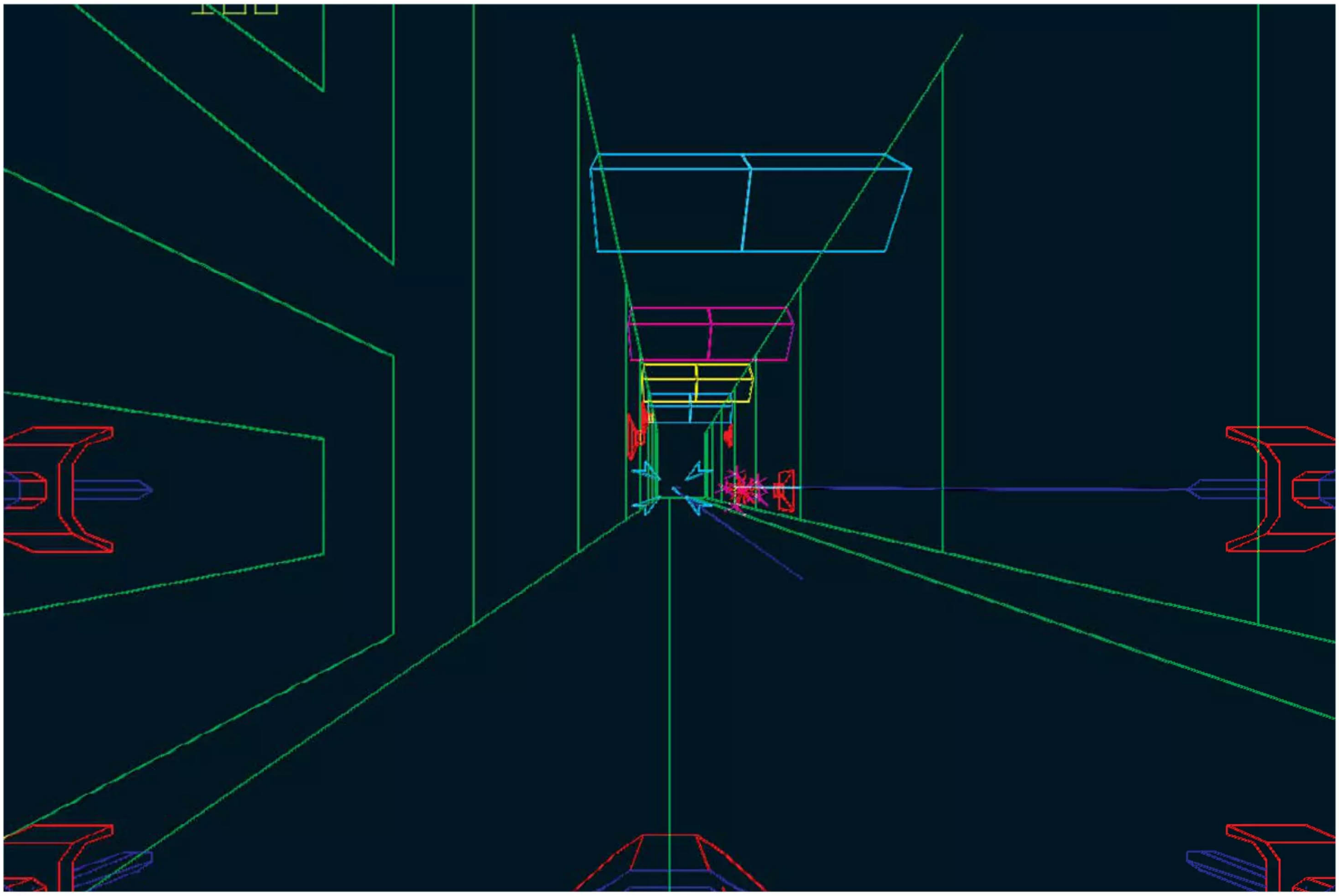
KWIK SNAX

Year released: 1990

One of Dizzy's later outings, this is a very different dish on the C64 compared with the Spectrum and we prefer the tasty Pengo meets Mr Do action of the latter.

THE MAKING OF STAR WARS

A LONG TIME AGO, BUT NOT IN A GALAXY FAR, FAR AWAY, ATARI CREATED AN INCREDIBLE VECTOR GRAPHICS VIDEOGAME BASED ON GEORGE LUCAS'S STAR WARS. DARRAN JONES USES THE FORCE TO TRACK DOWN ITS PROJECT LEADER, MIKE HALLY, TO DISCOVER HOW IT WAS CREATED. MANY BOTHANS DIED TO BRING YOU THIS INFORMATION…



The *Star Wars* saga is easily one of the most famous film franchises of all time and has made its creator George Lucas a very rich and powerful man. It also happens to have had more videogame adaptations than any other film – the first, an Atari 2600 re-creation of *The Empire Strikes Back*, was released in 1982 – and, some 31 years later, it shows little sign of slowing down, especially with the recent news that new owners Disney are planning new films. While the franchise has had its ups and downs over the years, it's often delivered some true gems amongst its occassional stinkers. By far the best though is Atari's excellent arcade game.

> "I WAS VERY EXCITED TO BE A PART OF THIS EXPERIENCE AND TO BE RUBBING SHOULDERS WITH THE LIKES OF GEORGE LUCAS"
>
> MIKE HALLY

Impossibly slick, with booming digitised speech and an instantly recognisable sit-down cabinet – a smaller, stand-up version also existed – Star Wars was a thing of beauty and remains an utterly absorbing shoot-'em-up and a stunning example of how well videogames could capture the essence of a completely different medium. Amazingly, however, it didn't actually start off as a *Star Wars* videogame at all…

Use the force Jed…

"Star Wars came about because I wanted to do a 3D space war game. I mean, I really wanted to do a 3D space war game," reveals Jed Margolin, *Star Wars*' main programmer and the driving force behind the classic game, on his personal website. "It's why I went to work for Atari. Even before going to Atari I had already worked out the math for 3D that did not use homogeneous co-ordinates. The use of homogeneous co-ordinates just gets in the way of understanding what is really going on in 3D."

"This is a first-person game which will be using 3D perspective graphics."

With this simple sentence – part of Jed's far larger game idea proposal – *Warp Speed* was put forward as a potential game project. This was 14 November 1979. Effectively *Battlezone* in space, the document stated that *Warp Speed* would place the player in the cockpit of a space fighter and would pit them against a like-minded opponent – two cabinets could be linked together to achieve this – while the stars and enemy space fighter would be handled as three-dimensional projected figures. The computer opponent would self-adjust to the player's skill level and games would be time-based, with the player winning bonus time depending on how well they played. There was even a suggestion to tie it in with a possible space movie, or *Star Wars II* as Jed called what would eventually become *The Empire Strikes Back*.

Warp Speed was given the green light and Jed began to assemble his team. Greg Rivera was on programming duties, while Ed Rotberg would step in as the game's project leader. But then disaster struck. "Ed, along with Howard Delman, left the company and started their own company, Vidia, which was later bought by Nolan Bushnell and folded into Sente. Greg and I needed a project leader and selected Mike Hally. Usually, the project leader selects the team, but in this case the team selected the project leader." After an initial stall, *Warp Speed* was back on.

IN THE KNOW

- **Publisher:** Atari
- **Developer:** In-House
- **Platform:** Arcade
- **Year released:** 1983
- **Genre:** Shoot-'em-up
- **Expect To Pay:** £1,000+ ($1,800+)

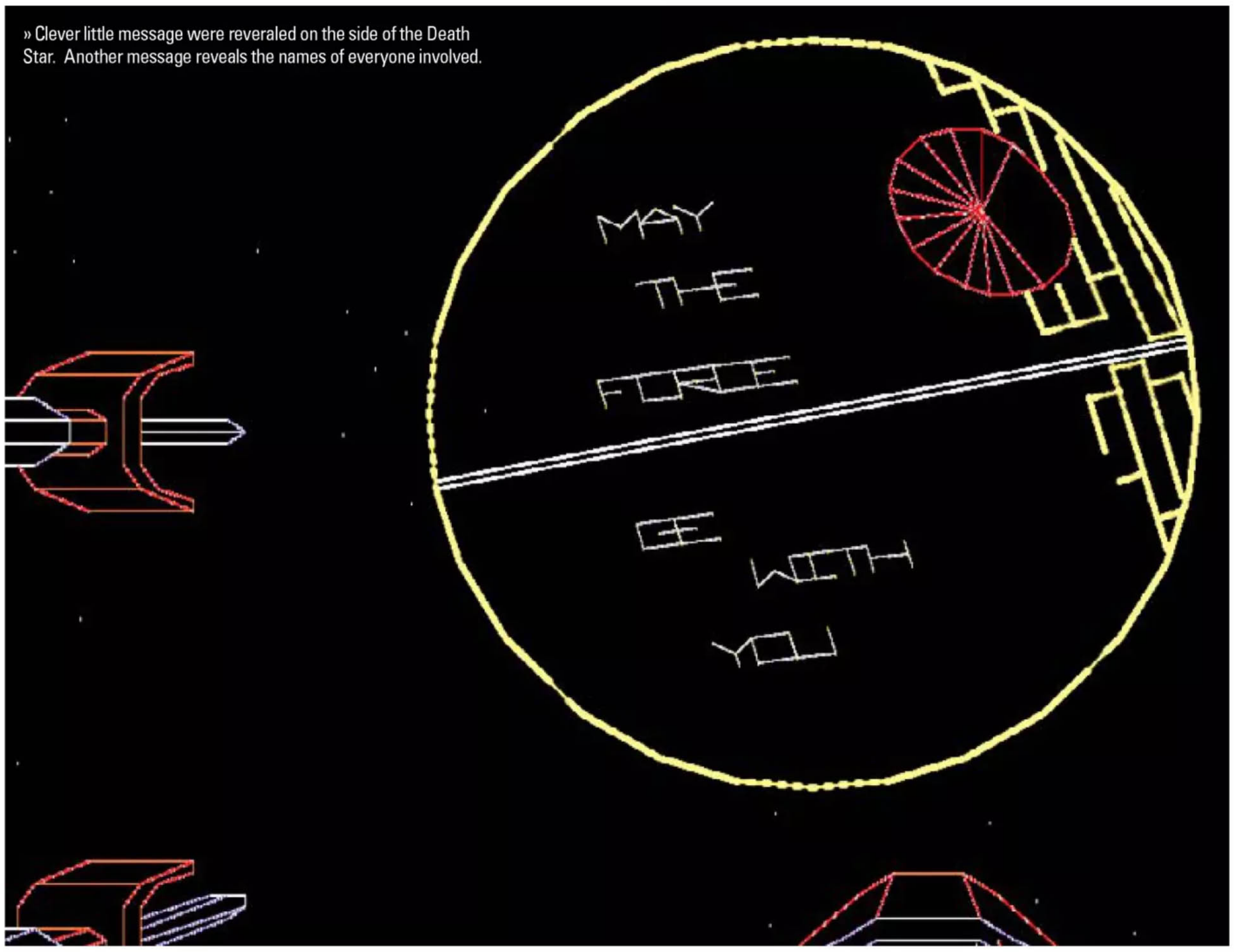
"Jed was a truly terrific hardware engineer for Atari and had been working on a higher-powered vector graphics hardware since Atari had had some success with games such as *Asteroids*, *Lunar Lander* and *Gravitar*," recalls Mike about his early recollections of working on the game.

"As I remember, I had finished *Gravitar* with Rich Adam and was working on some new game concepts when someone in the licensing/marketing department approached the engineering group to find out if the new hardware Jed Margolin was working on was capable of doing a *Star Wars* game."

Mike was soon hard at work creating storyboards with Dave Ralston, which would not only describe the style and flow of the game, but would be used by Atari to potentially pitch *Warp Speed* to the newly formed LucasGames. After a few internal meetings, Mike was ready to pitch the *Star Wars* game design to the licensing group at LucasGames.

From Warp Speed to Star Wars

"I remember the meeting going very well, and sometime shortly after this meeting I was informed that we had a licence agreement with Lucas to do the coin-


» Clever little message were reveraled on the side of the Death Star. Another message reveals the names of everyone involved.

WHAT'S IN A NAME?

Back in the early days of videogaming, Atari was notorious for not crediting the authors of its games. The arcade release of *Star Wars* was no different, so Mike and the rest of the team hatched a cunning plan to ensure that their hard work wouldn't go unnoticed.

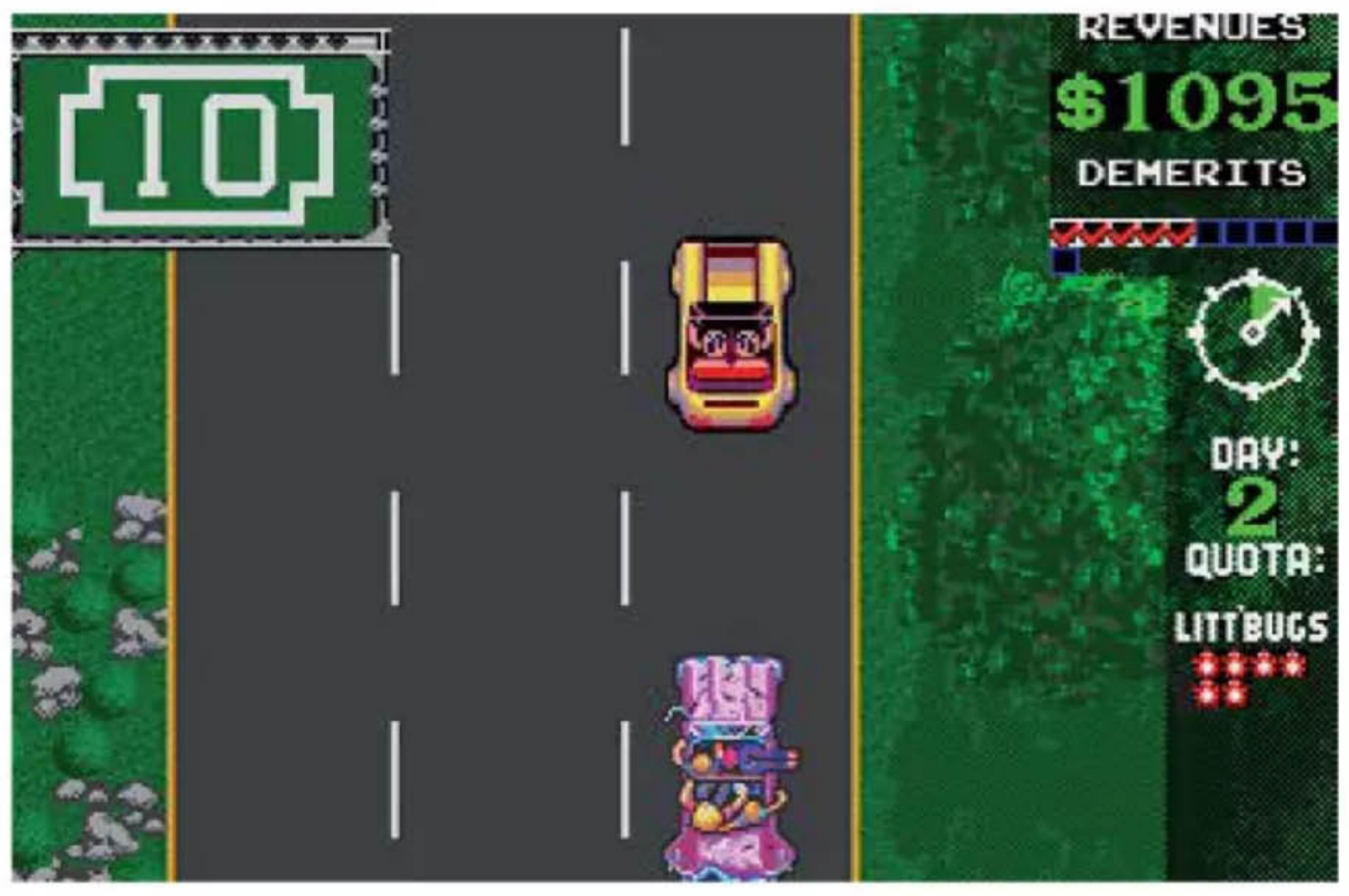
Whenever you make the final approach to the Death Star, the huge space station has either 'May the Force be with you', or the names of the team displayed on its side.

"There is a control on the monitor that allows all the lines to become visible so that the operator can make adjustments," reveals Mike about his ingenious idea. "These lines were not meant to be seen. Atari used to be afraid to publish the names of the developers in fear that other companies would steal their talent."

"Normally on the Death Star, as it zooms in, you just see what looks like random dots or lights. However, with a tweak of the monitor you can see the interconnecting lines. If my memory serves me right, Atari management did not know about this until sometime after production was well underway. I also believe that after this the game teams could add in the attract mode, a credit screen listing names and positions of team members like movies did. You need to give 'credit' where credit is due as they say!"

THE GAMES OF MIKE HALLY

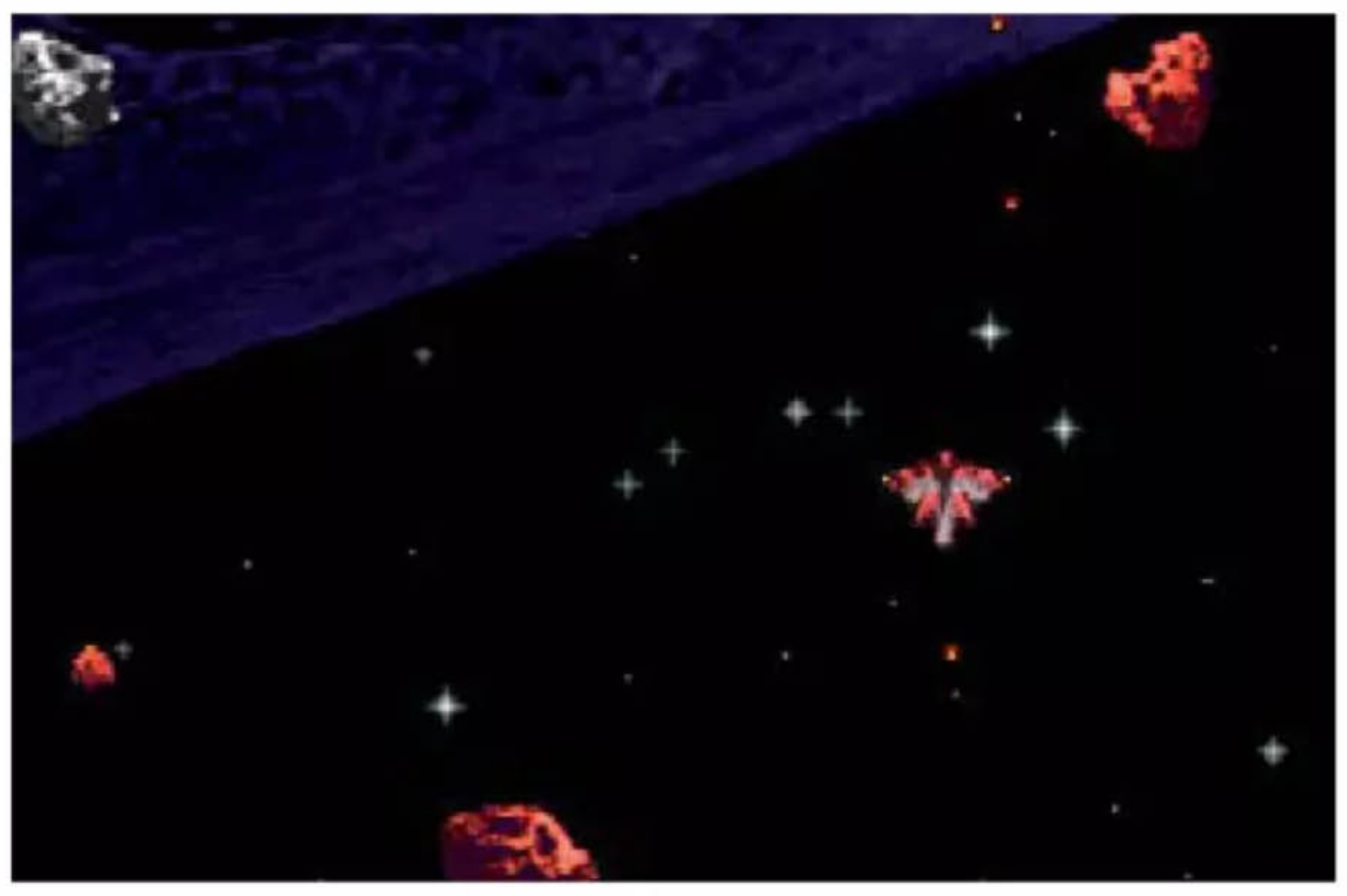
MIKE HALLY HAD QUITE AN ILLUSTRIOUS TIME AT ATARI'S COIN-OP DIVISION AS THE FOLLOWING TITLES PROVE



ALL POINTS BULLETIN

- **Released:** 1987
- **Role:** MLH

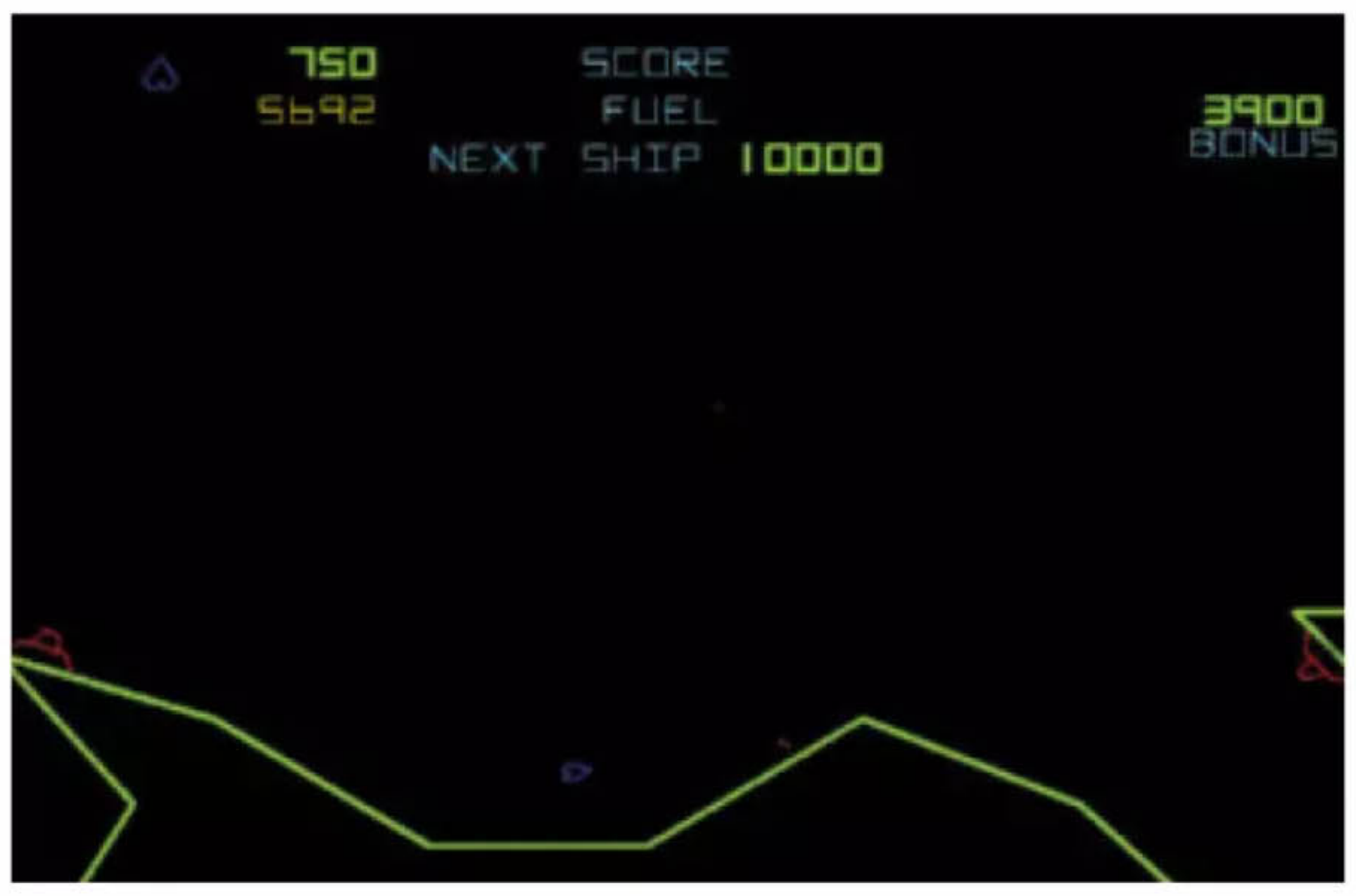
Great game that sees you playing a cop who must pull various law breakers within a time limit. It's gameplay could be seen as an early blueprint for the *GTA* series.



BLASTEROIDS

- **Released:** 1987
- **Role:** MLH

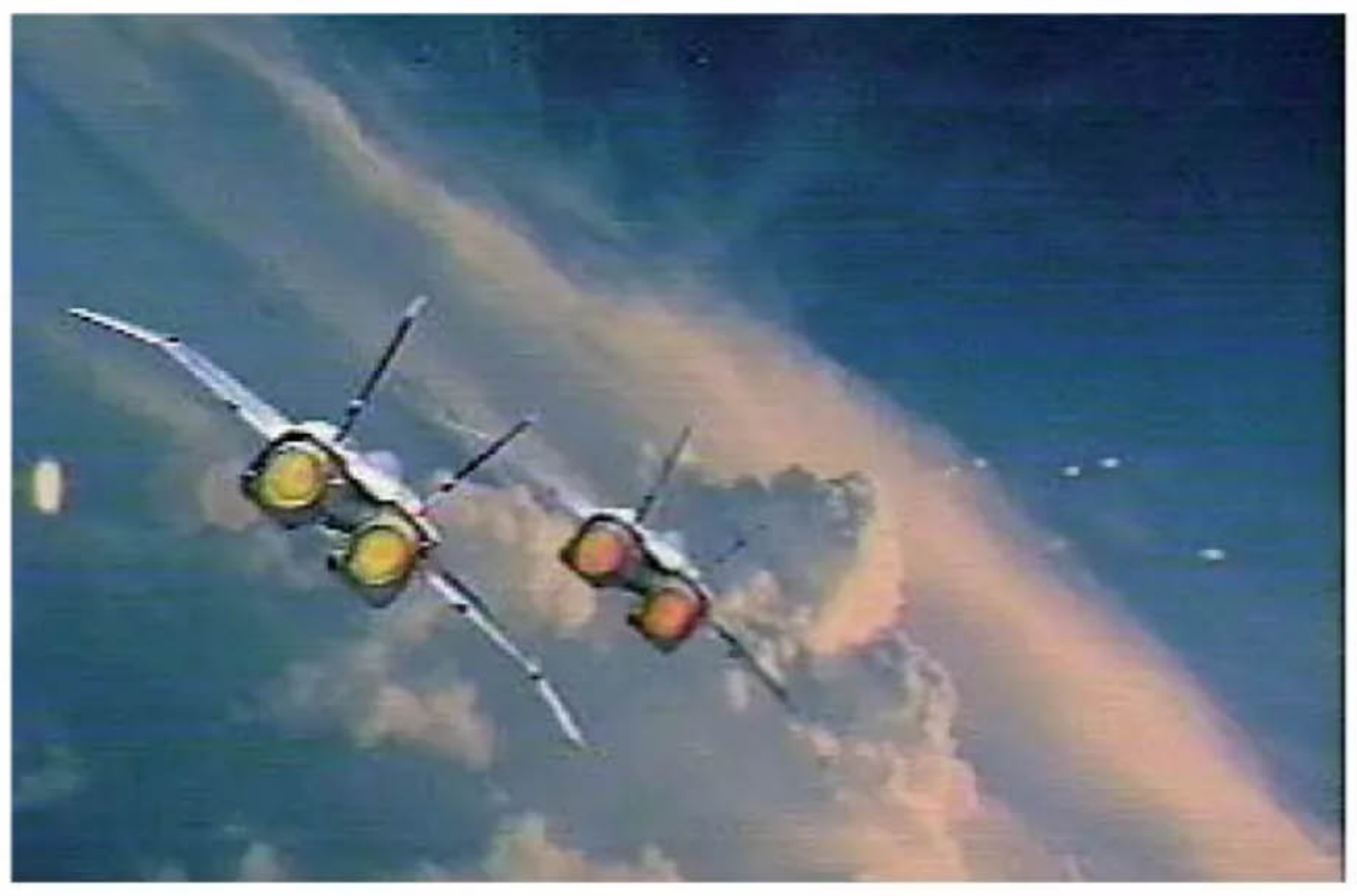
Atari's fourth game in the *Asteroids* series offered a huge boss to fight, plenty of different power-ups and an enjoyable two-player mode.



GRAVITAR

- **Released:** 1982
- **Role:** Designer

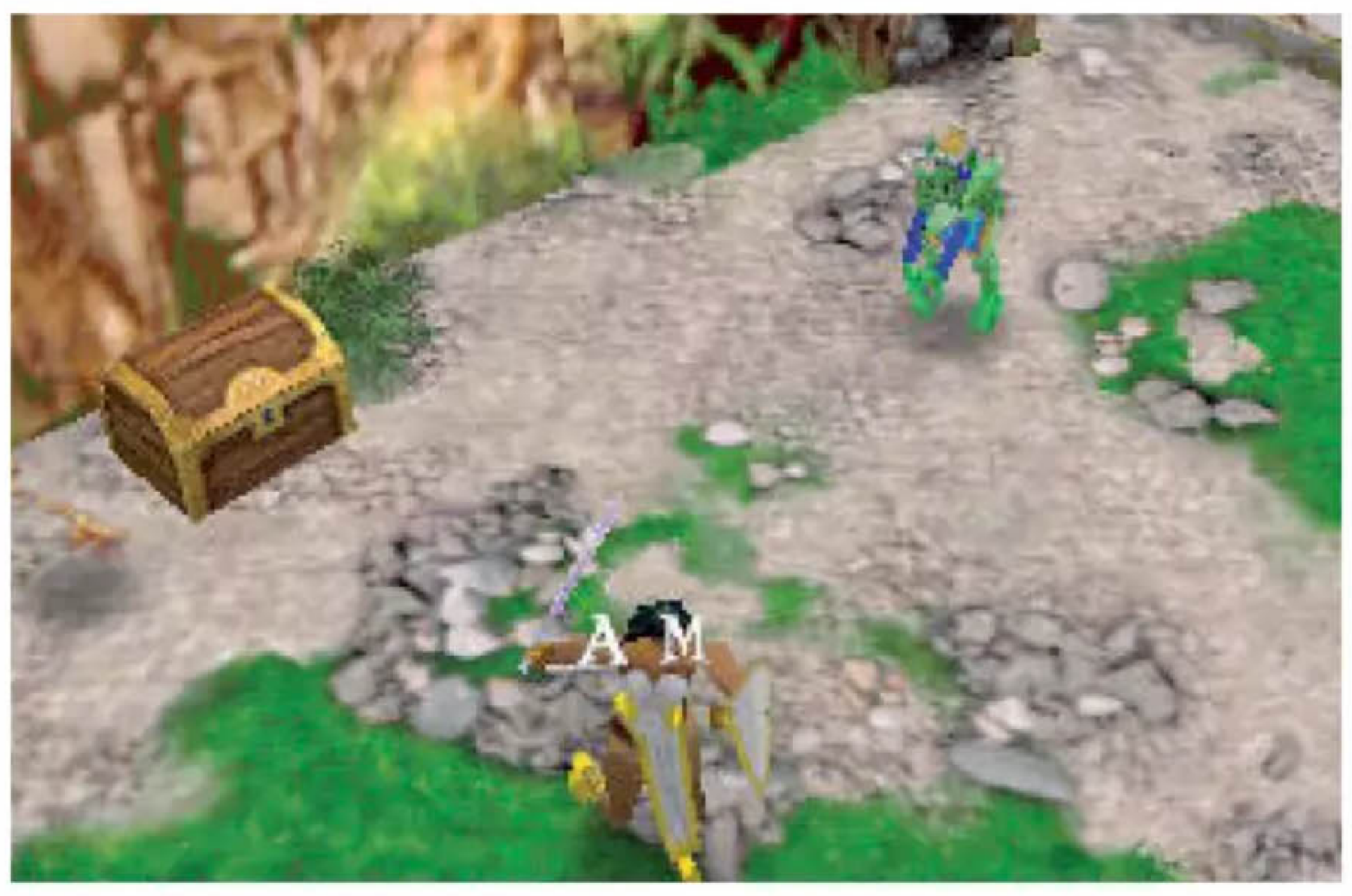
Great little shooter that had impressive visuals and varied gameplay that paved the way for the likes of *Oids* and *Thrust*.



FIREFOX

- **Released:** 1983
- **Role:** Project Leader

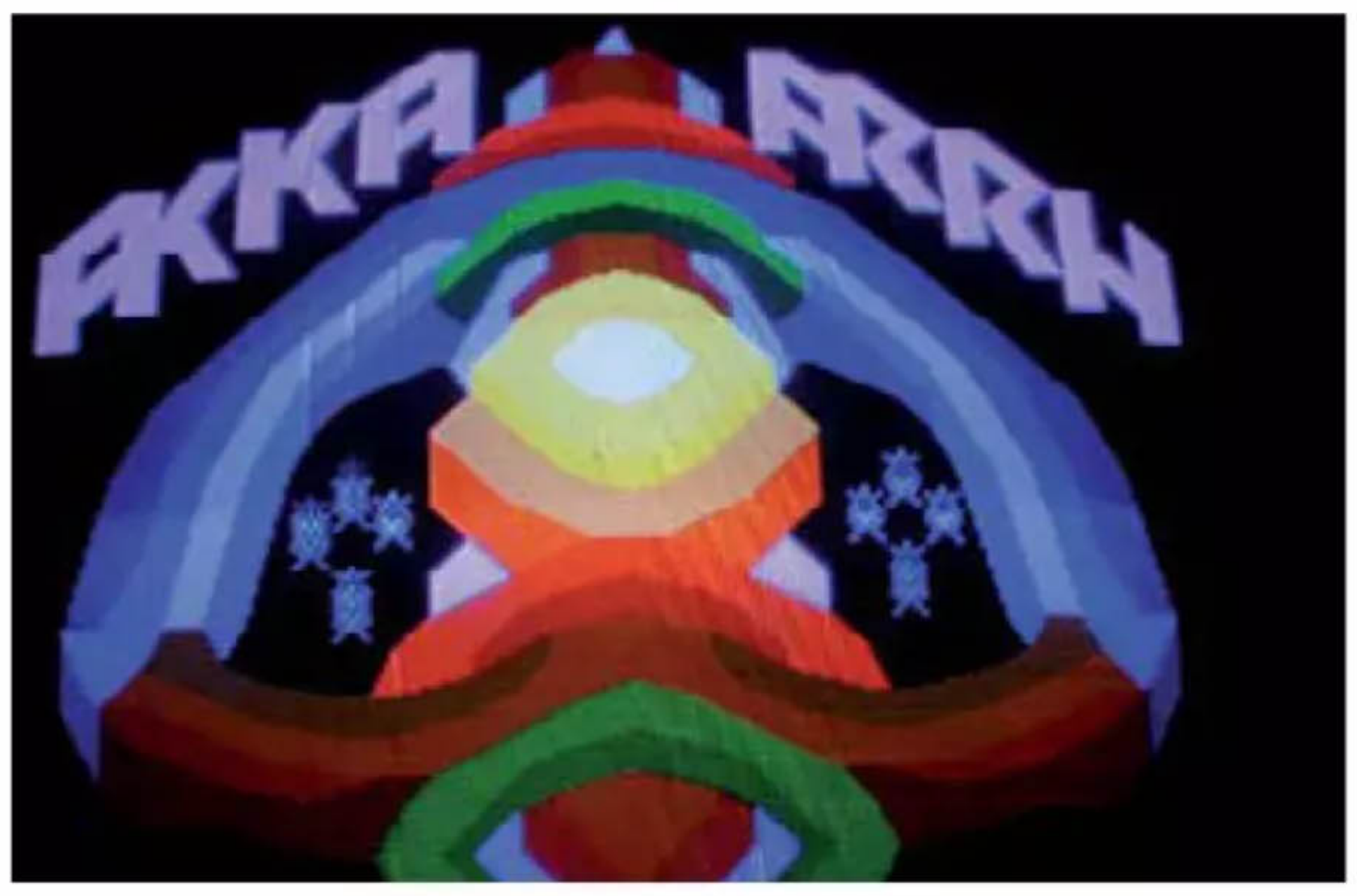
This Laserdisc release was based on the 1982 Clint Eastwood film (which in turn was based on Craig Thomas's 1978 thriller).



GAUNTLET DARK LEGACY

- **Released:** 1999
- **Role:** Producer/Game Design

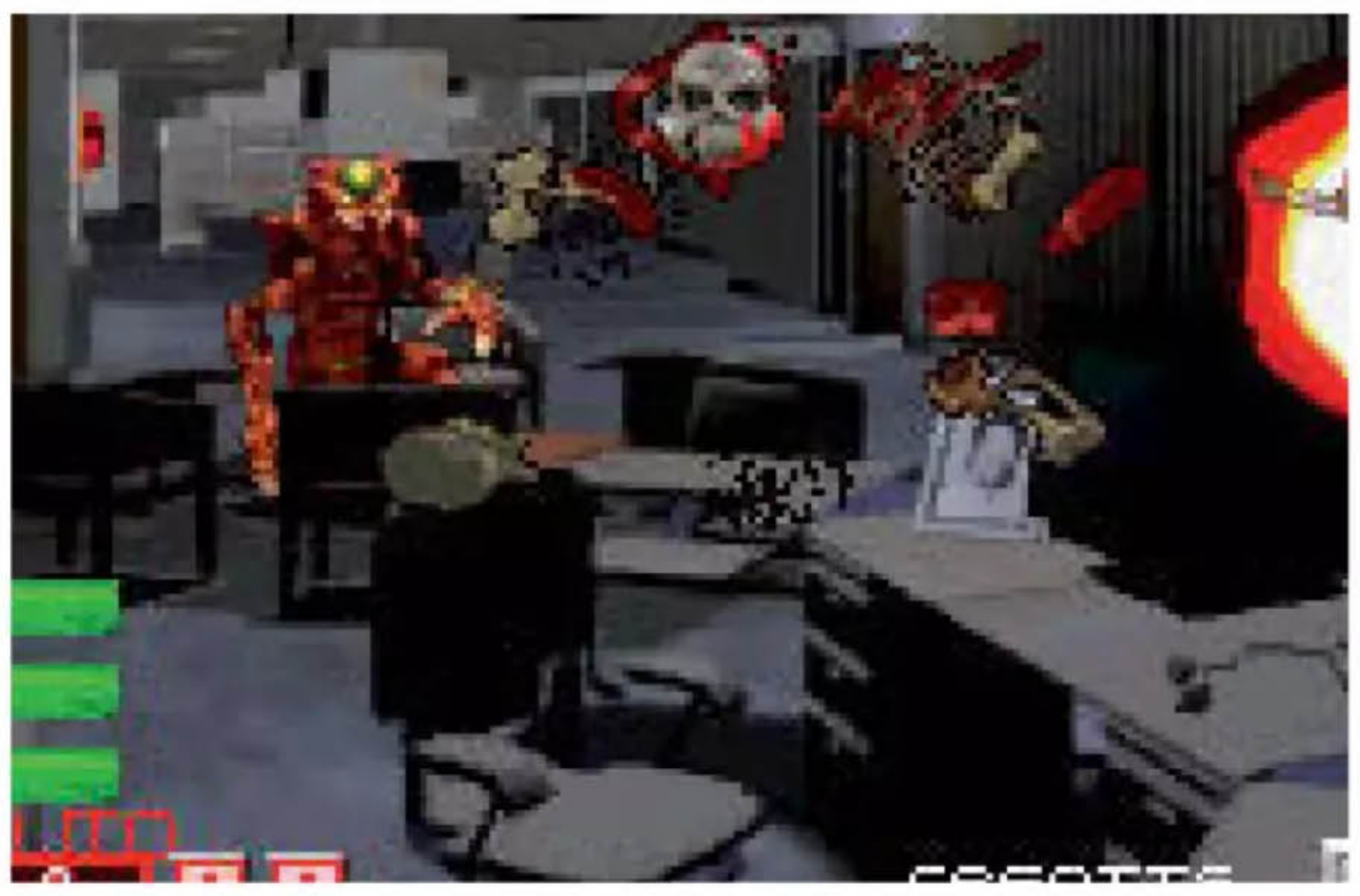
This sequel to *Gauntlet Legends* offers several additions such as the ability to make slow and fast attacks, as well as four new characters.



AKKA ARRH

- **Released:** 1982
- **Role:** Designer/Programmer

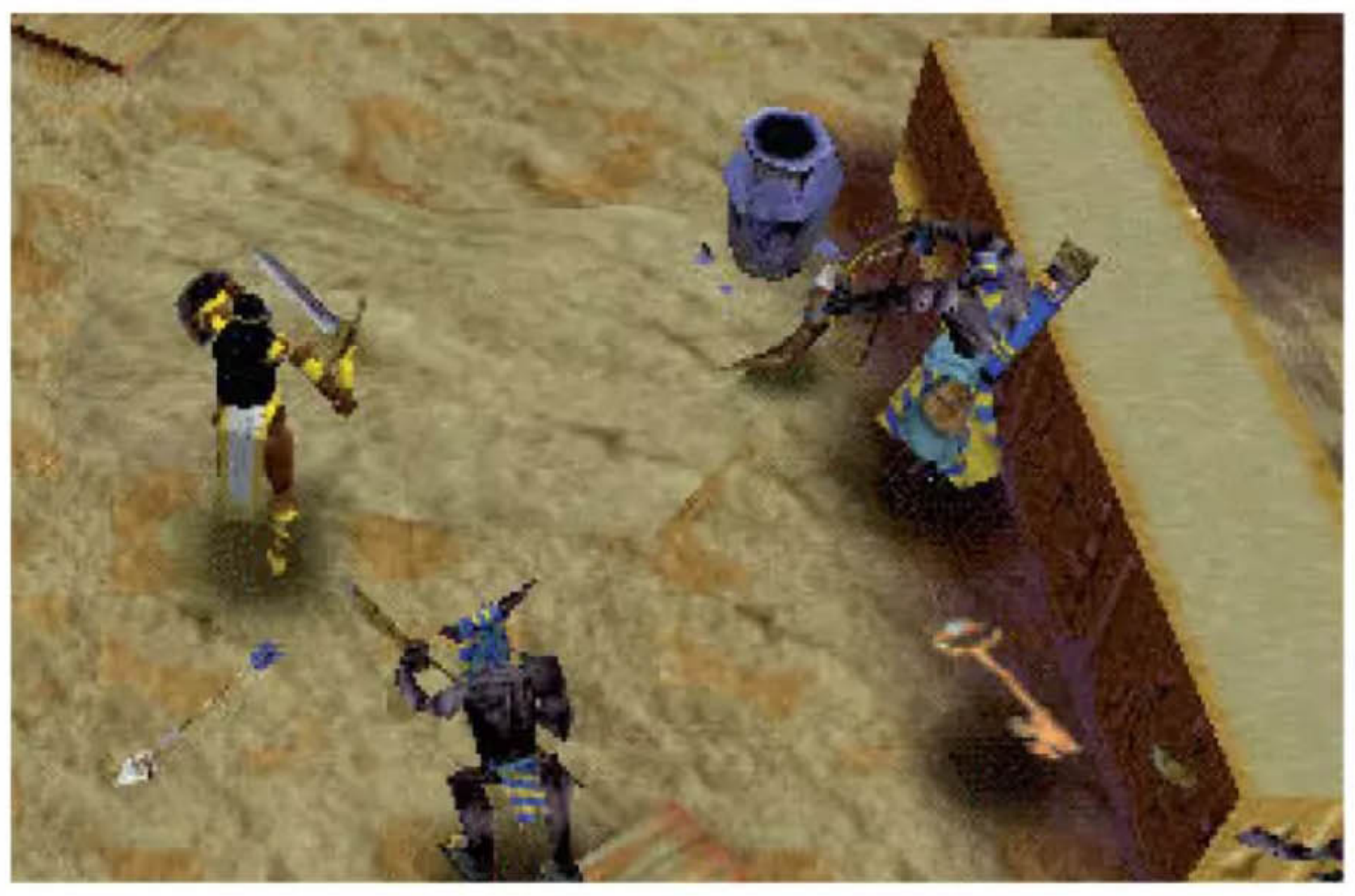
Early release that isn't currently emulatable in MAME, so you're going to have a tricky time playing it unless you own an original cab.



AREA 51

- **Released:** 1995
- **Role:** Game Design

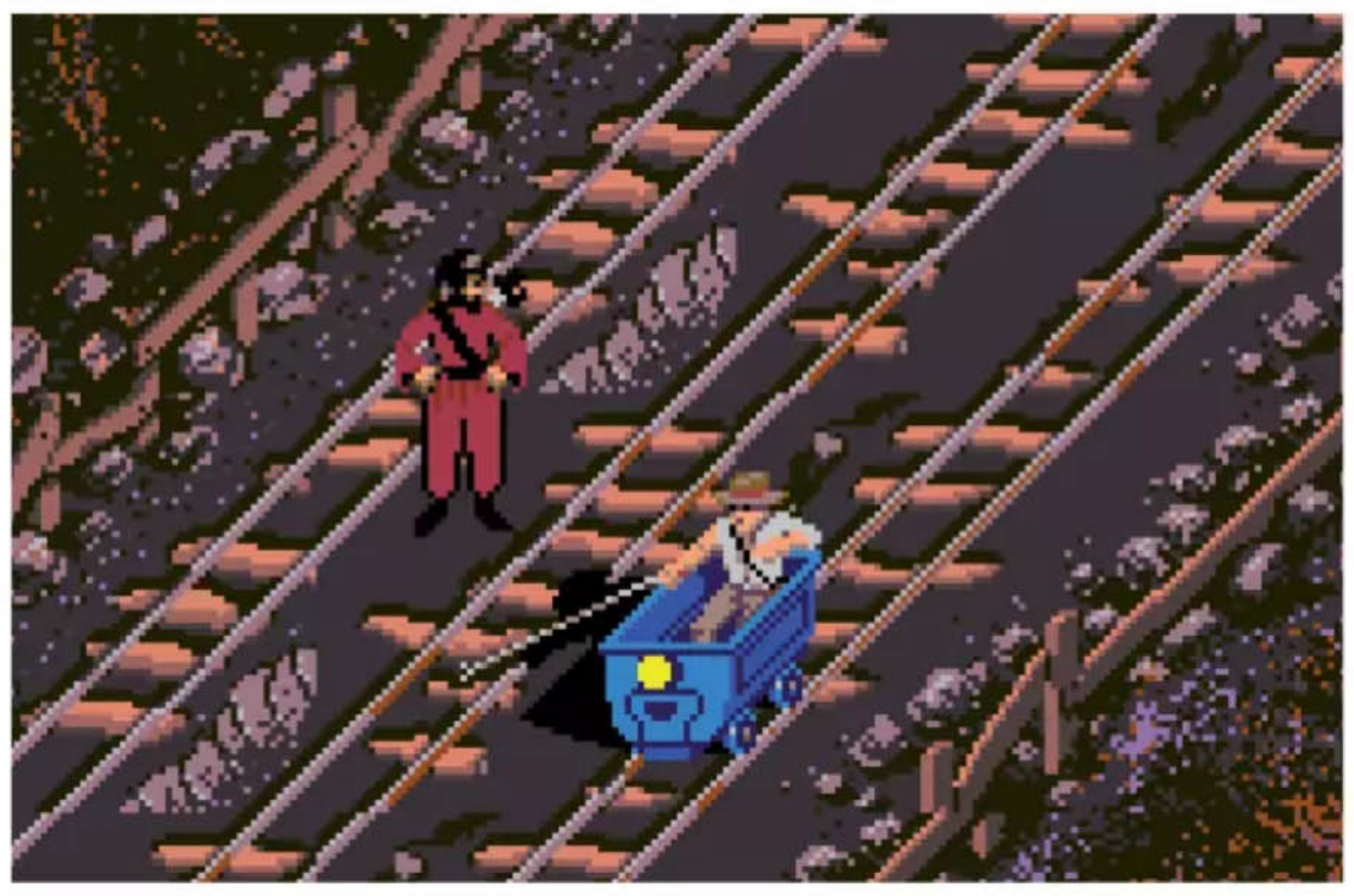
Fairly bland, by-the-numbers lightgun game that tries desperately hard to emulate the success Sega had with the genre but fails miserably.



GAUNTLET LEGENDS

- **Released:** 1998
- **Role:** Producer

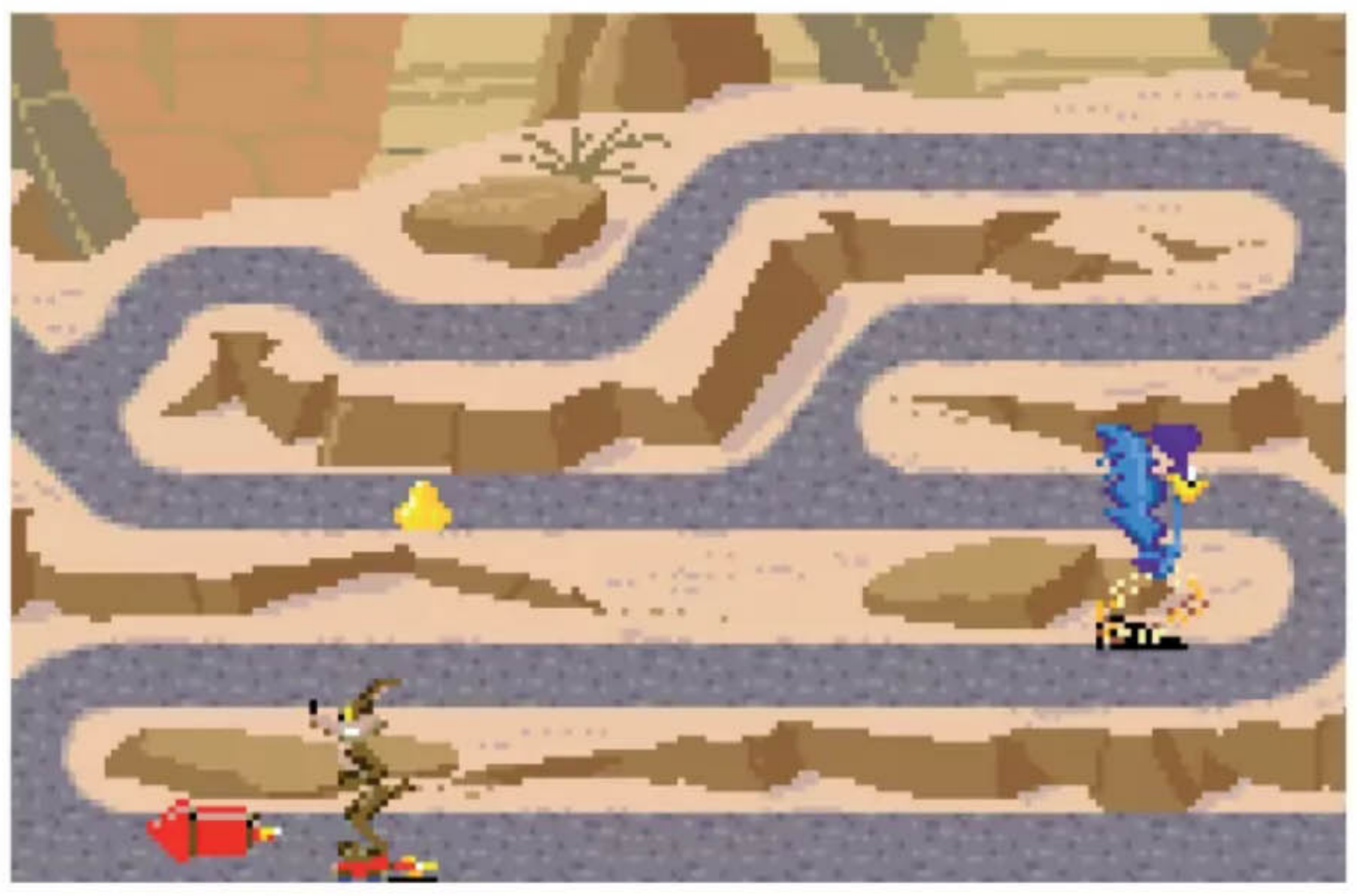
Unlike many games of the time, this fun update of the classic franchise enabled players to use passwords so characters could be saved.



INDIANA JONES

- **Released:** 1985
- **Role:** Producer

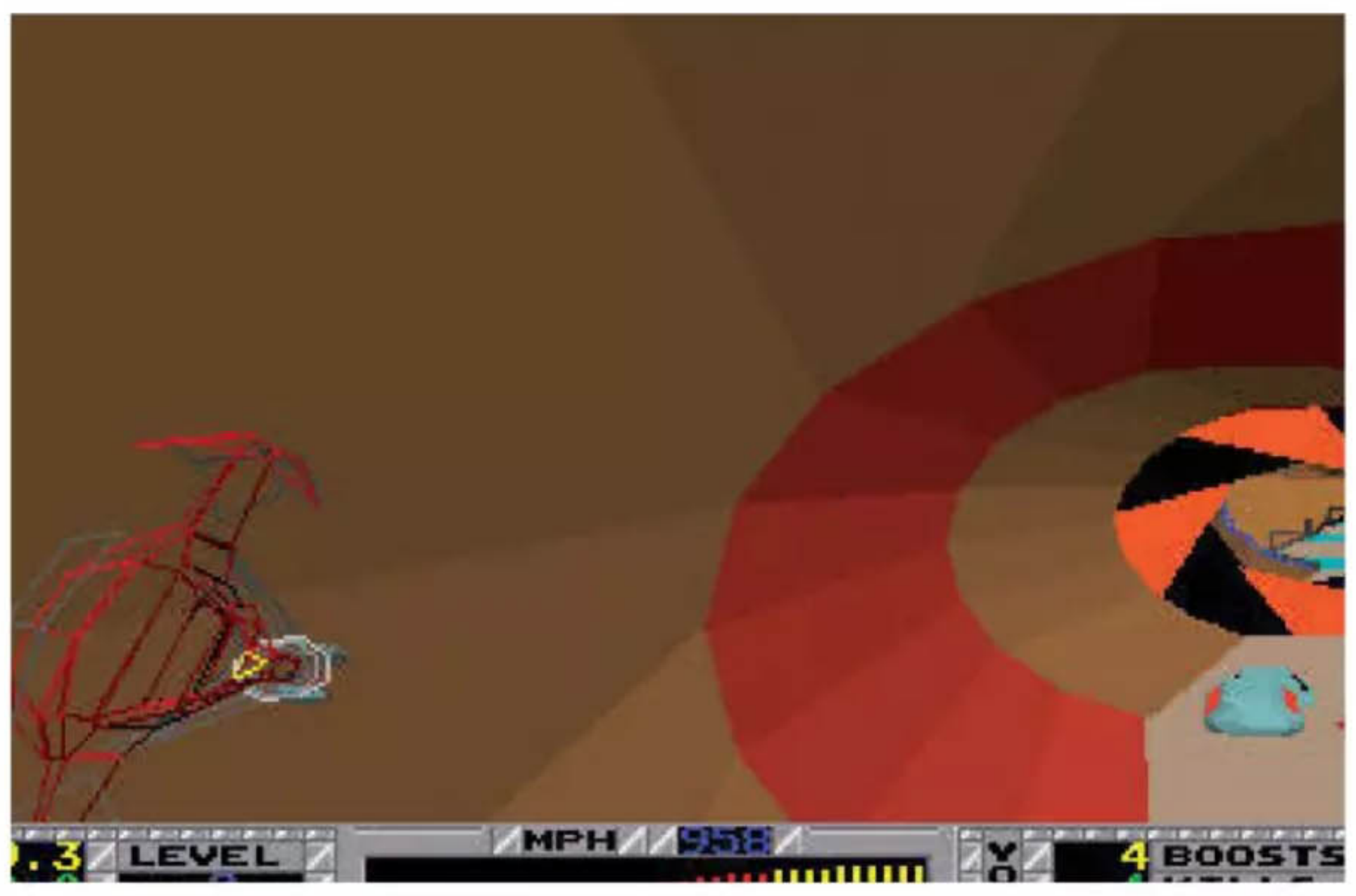
Fun take on the film that has Indy whipping snakes and Thuggee guards, swinging over chasms with his whip and recovering the Sankara stones.



ROADRUNNER

- **Released:** 1985
- **Role:** Director

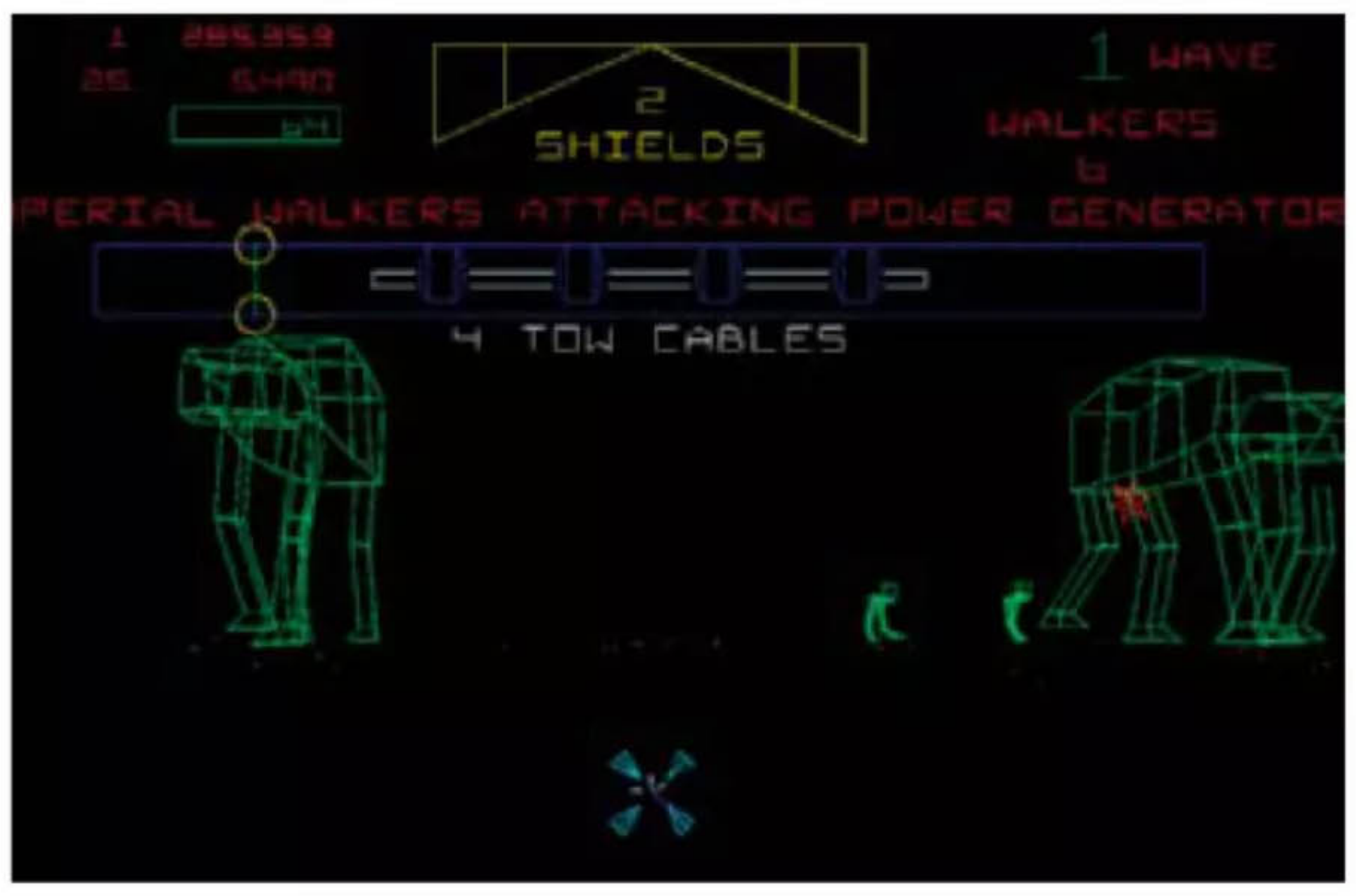
It's a great use of the *Road Runner* licence, but certain parts are so difficult that all the animations in the world won't stop you from puting your head through the screen.



S.T.U.N. RUNNER

- **Released:** 1989
- **Role:** Overlord

An excellent, fast-paced futuristic racer that combines impossibly slick visuals with fast-paced action to create an exhilarating experience.



EMPIRE STRIKES BACK

- **Released:** 1985
- **Role:** Product Manager

This sequel to *Star Wars* does push the technology – there's lots happening on screen – but it's not quite as fun to play.

operated *Star Wars* project," recalls a clearly pleased Mike. "I was very excited to be a part of this experience with Atari and to be rubbing shoulders with the likes of George Lucas. As far as Jed picking me to be the project leader, I really do not remember how much control he had in this decision, but I'm pretty sure he did have some major input in the final decision."

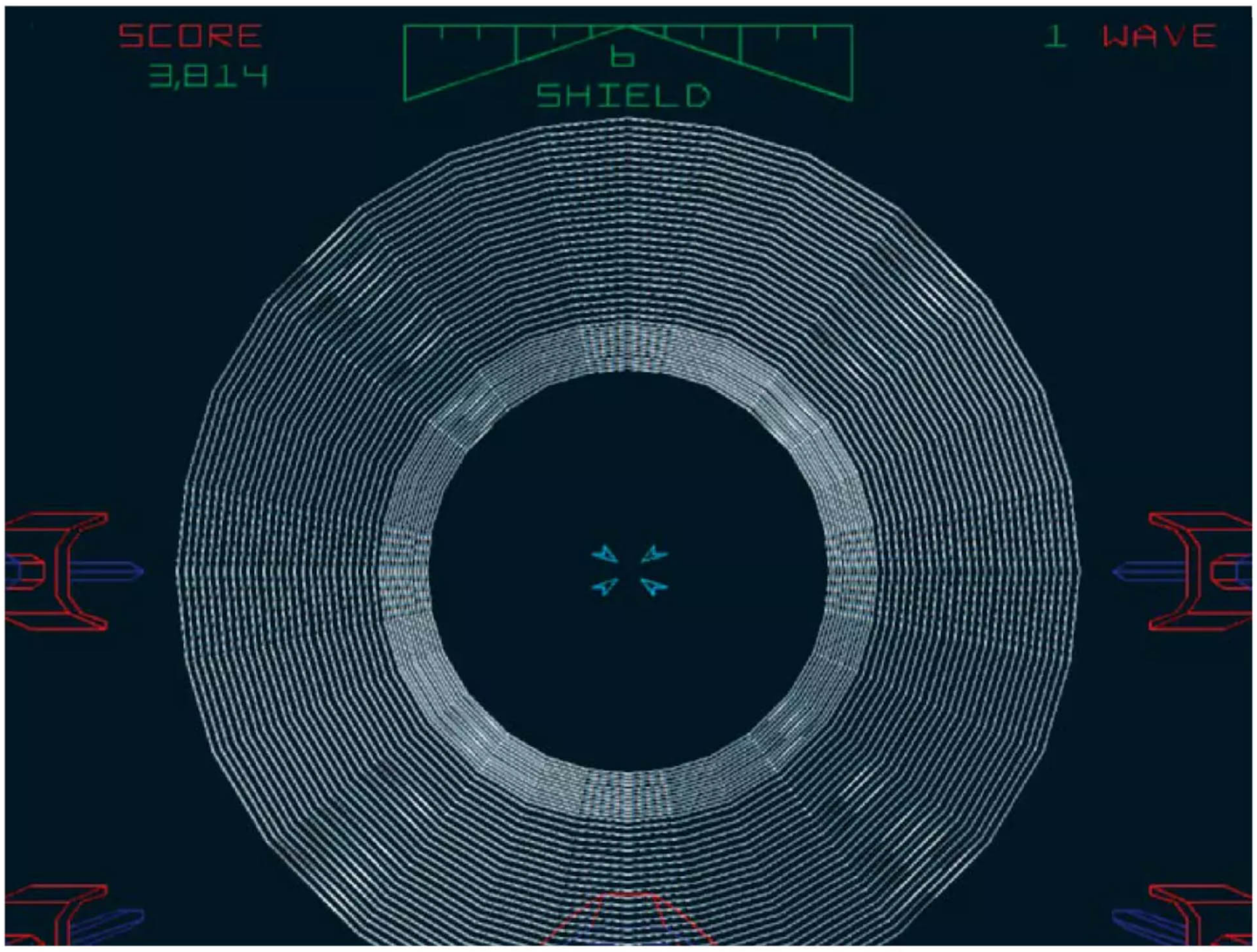
Warp Speed officially turned into the *Star Wars* project in January 1982, a good 26 months after Jed first pitched his idea. With the game ready to go, Mike and Jed quickly assembled the rest of the team who would take part in *Star Wars*' gruelling 18-month schedule. Earl Vickers took on the duties of audio engineer; Eric Durfey was the technician, while Norm Avellar was eventually roped in to assist Greg Rivera on programming duties. According to Jed, the team went through several technicians before they eventually arrived at Eric because "previous techs didn't want to spend their time on a game that was a guaranteed loser". While the tiny team no doubt seems ludicrous in today's climate of huge budgets and large work teams, Mike feels that it was the perfect recipe for success.

"It was really easy to communicate ideas and issues with each other because we were all located in the same lab area," he explains. "We became a family as such, as we spent so much time with one another at work. We had our moments of fighting, arguing, laughing and our moods went through many highs and lows. Greg and I were the only team members married at the time and we both had small children at home. Everyone on this team was very good at their skill so there was a lot of mutual respect for each other. We all believed in this project so it made it fun to come to work each day and see the progress the game was making. With each step, the rest of the company started to believe in us and saw the product's potential."

It may have all come good in the end, but a hell of a lot of hard work had to be crammed into those 18 long months. It was even trickier for Mike, as the eventual success of the finished game meant that he was still working on it long after it came off the final production run. Unsurprisingly, with such a long gestation period and small team, the path from small idea to mega-hit arcade game wasn't without its fair share of problems…

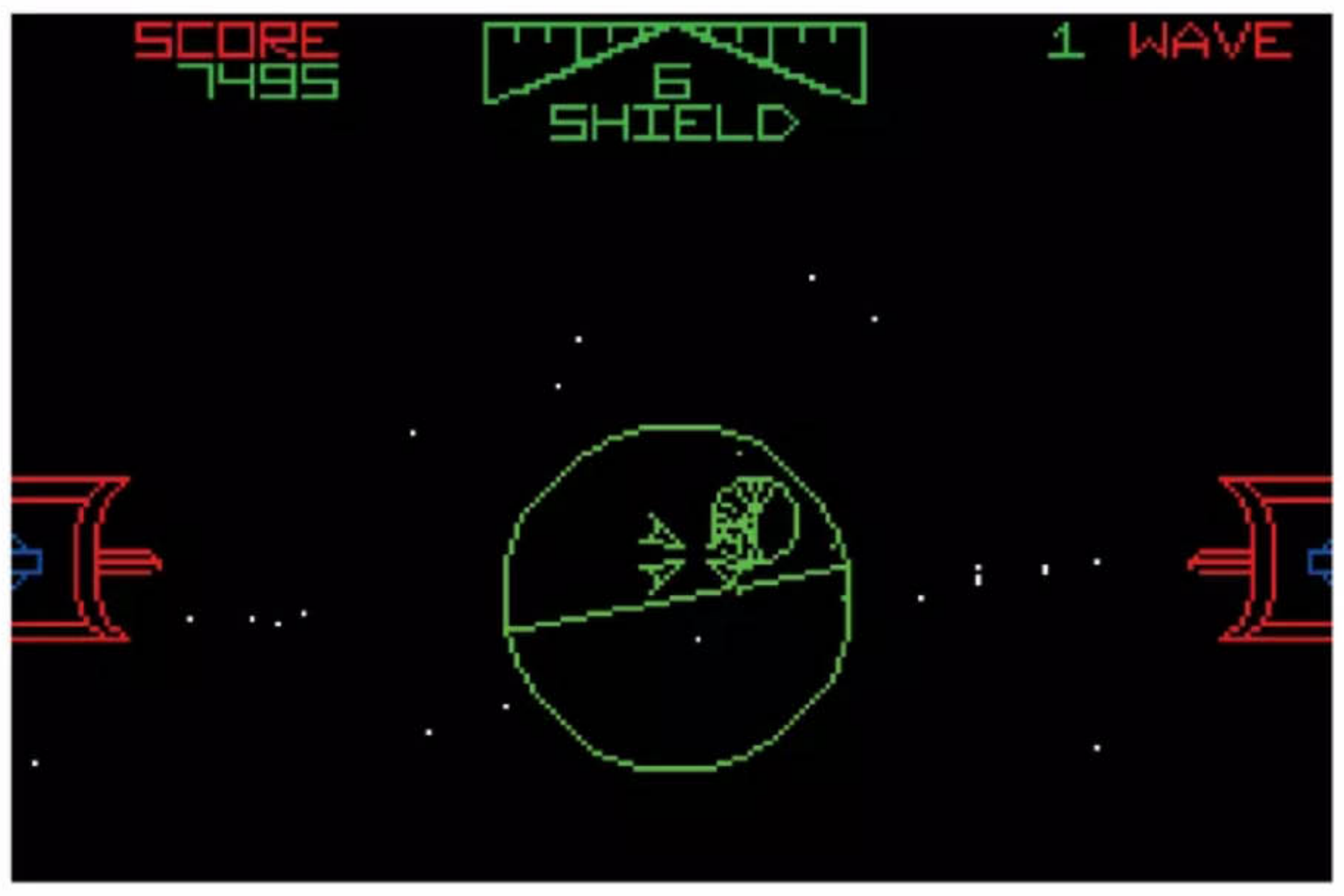
"This was the most intense project that I had ever been involved in, let alone being the project leader and game designer," recalls Mike. "Every single day was a battle of issues involving every department associated with *Star Wars*' development. From a team perspective, we were up against shared company resources, along with trying to create the impossible. New technology, a game worthy of the *Star Wars* name and a product that would out-earn any other game of the time were just some of the daily pressures we faced. And let's not forget the creation of a brand new controller, voice and music to the mix? Then, of course, there was the added pressure of creating a production-line product with a dead line that just about made us all go insane. Dealing with the licensing group just added another layer of complexity and complicated getting our work accomplished. *Star Wars* was also released in multiple cabinet configurations and was produced in two different production facilities to add to the overall difficulties. UL and FCC approved? The list goes on and

> "WE BECAME A FAMILY, AS WE SPENT SO MUCH TIME WITH ONE ANOTHER AT WORK"
>
> MIKE ON HIS DEV TEAM



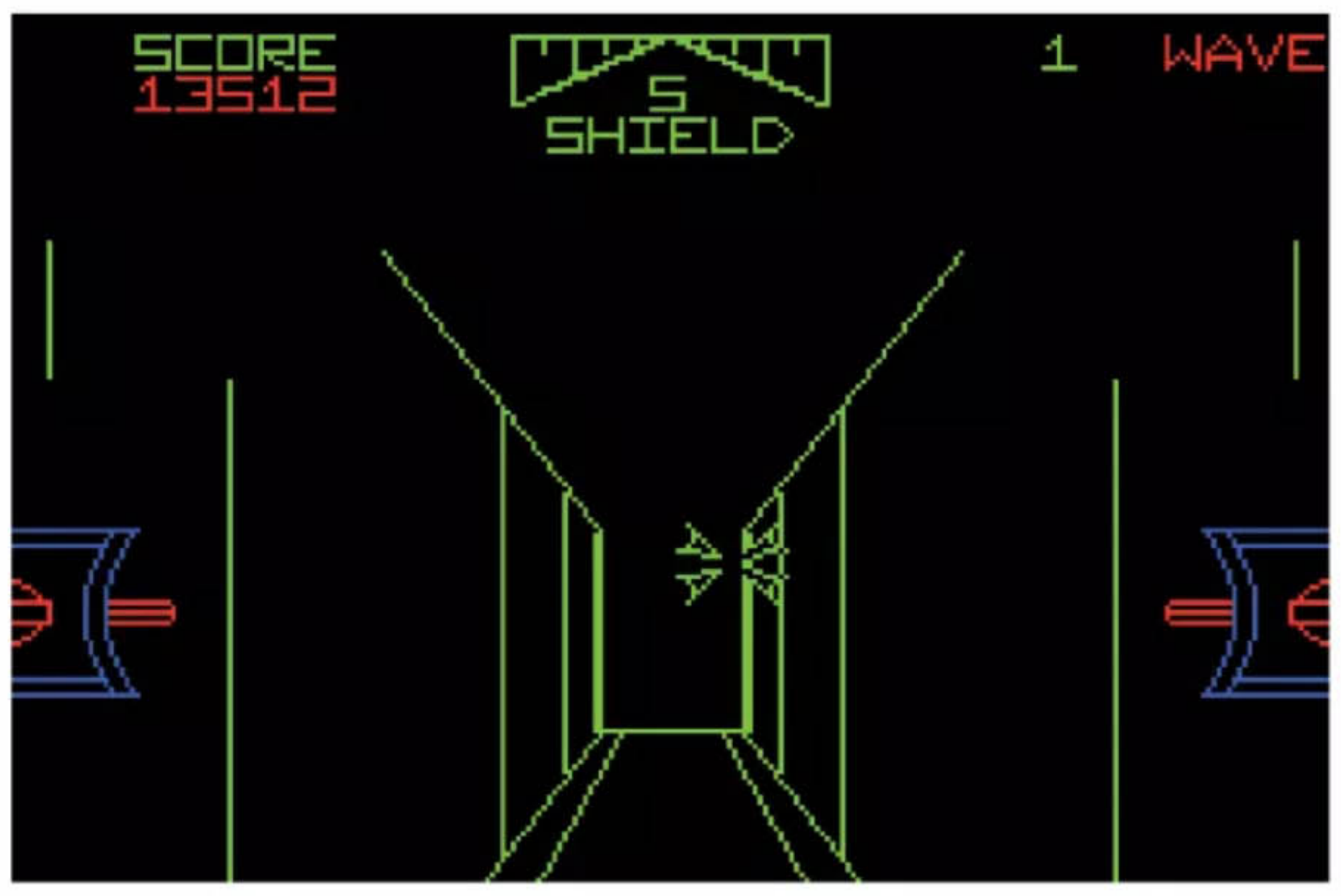
THE FORCE IS STRONG WITH THESE...

THE NUMEROUS CONVERSIONS OF STAR WARS


SCORE
7495
6
SHIELD
1 WAVE

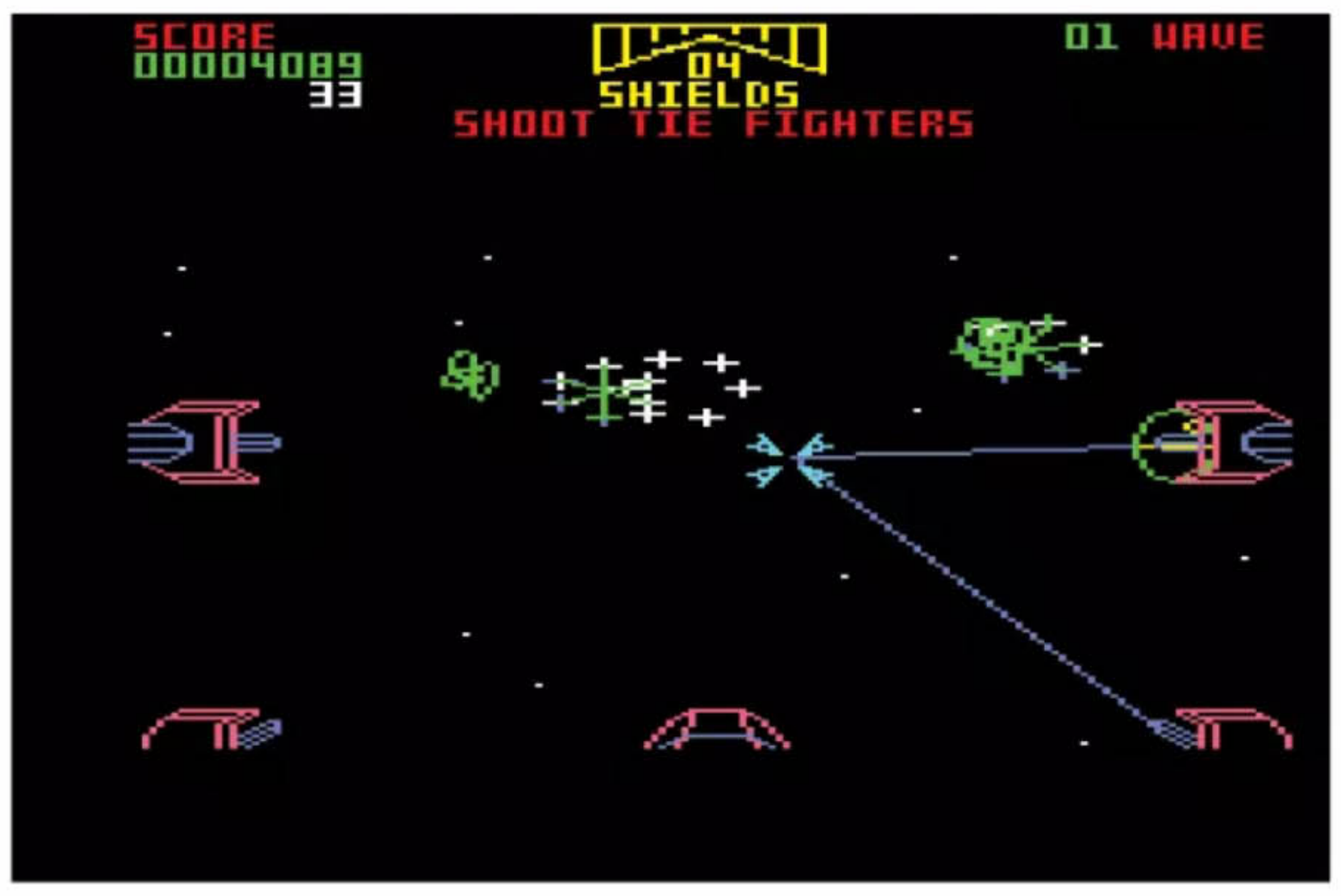
SPECTRUM

While the majority of 8-bit home conversions are fairly respectable, even the most hardcore Speccy fan will admit that this isn't without a few issues. Yes, has some nicely drawn visuals, but the sluggish pace and lack of sound in-game does dampen the overall experience.


SCORE
13512
5
SHIELD
1 WAVE

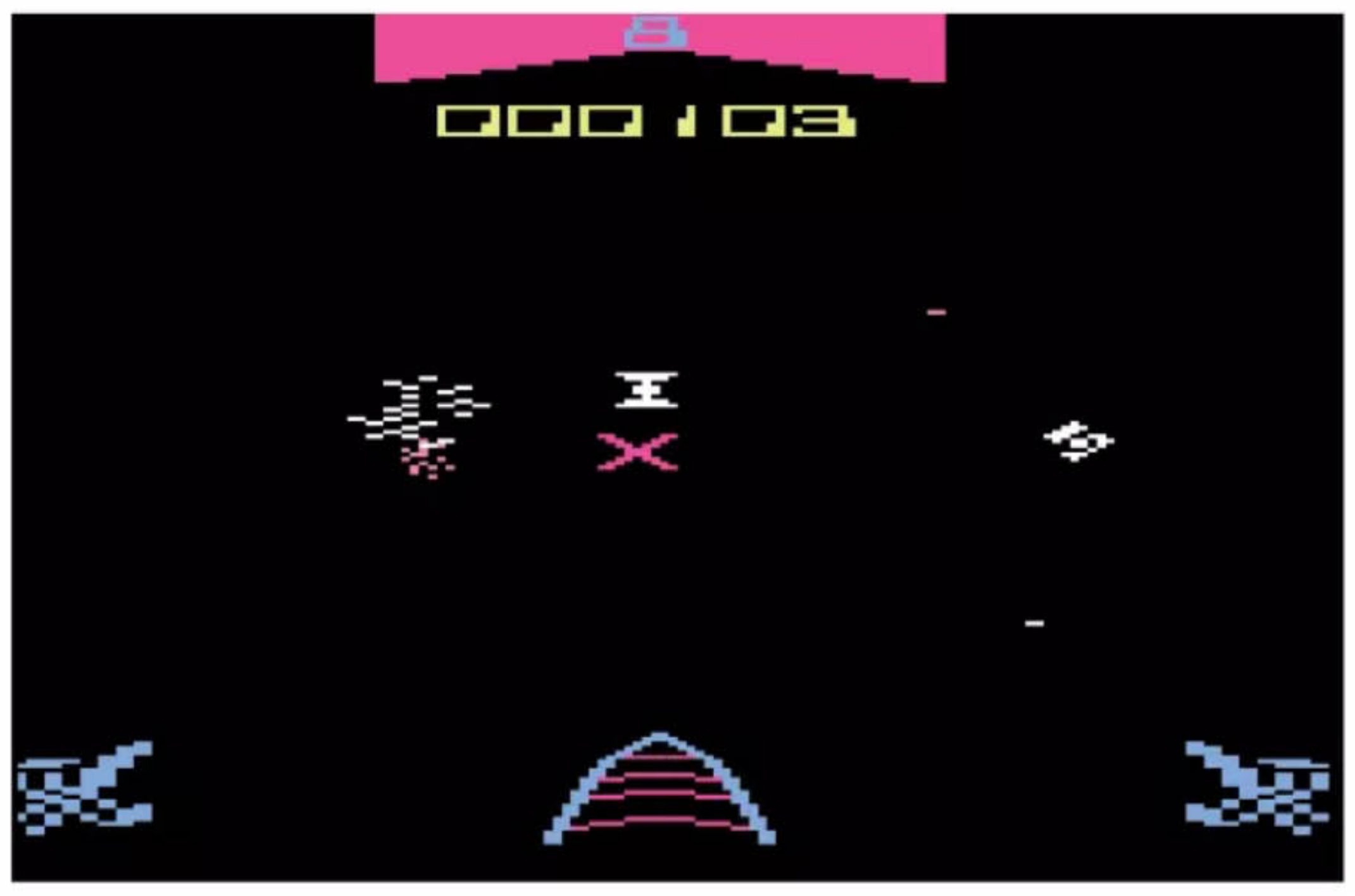
AMSTRAD

Considering our Amstrad background, it's somewhat difficult to champion the machine without being called biased. Nevertheless we're staunch defenders of the Amstrad port, even if it does lose out ever so slightly to the far nippier Commodore 64 version.


SCORE
00004089
33
04
SHIELDS
01 WAVE
SHOOT TIE FIGHTERS

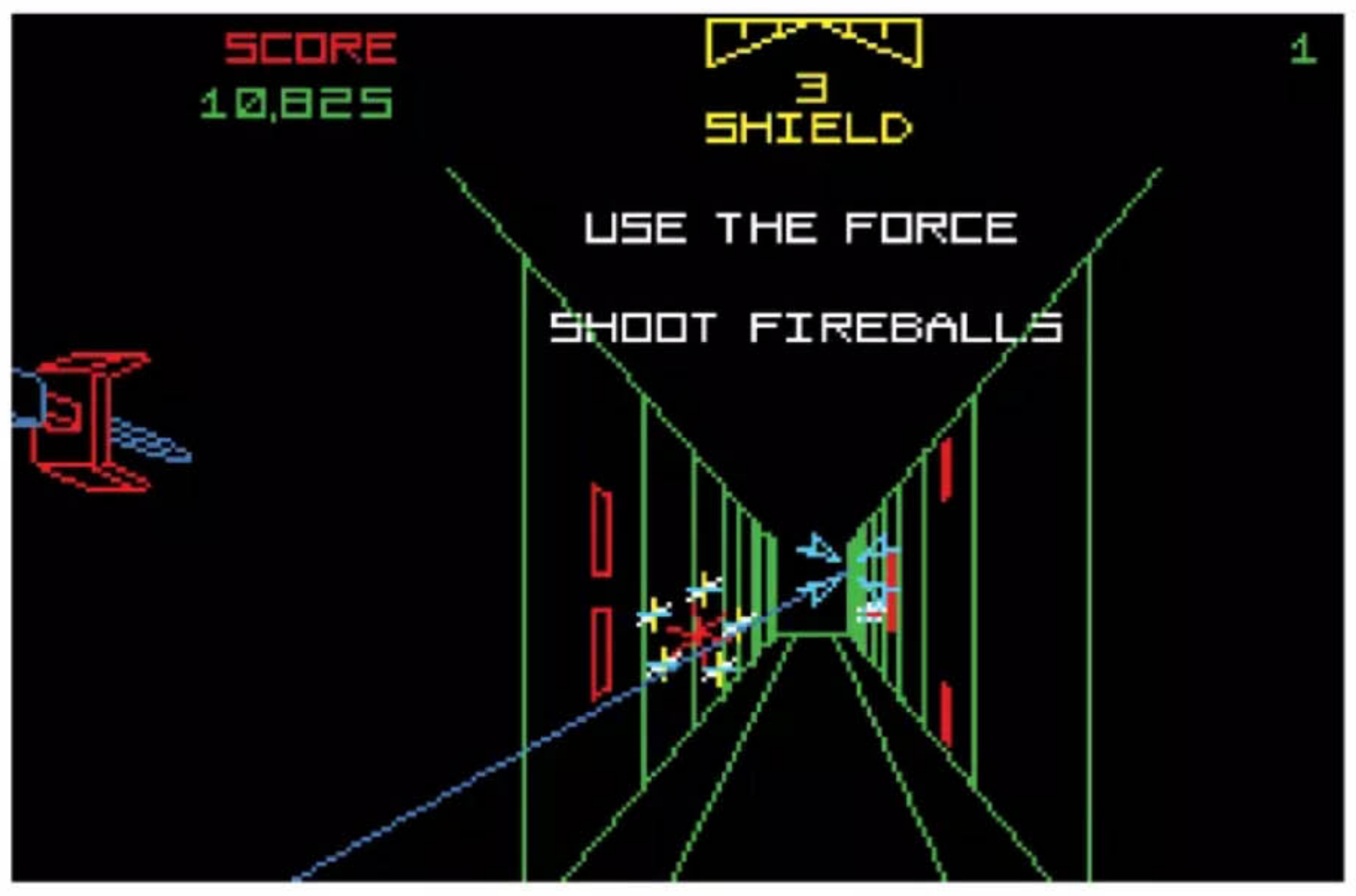
COMMODORE 64

The graphics are horrifically chunky, but there's no denying that this is otherwise a decent port of the classic arcade hit. Boasting a great rendition of the theme tune and solid in-game spot effects, this is great stuff and well worth a quick blast.



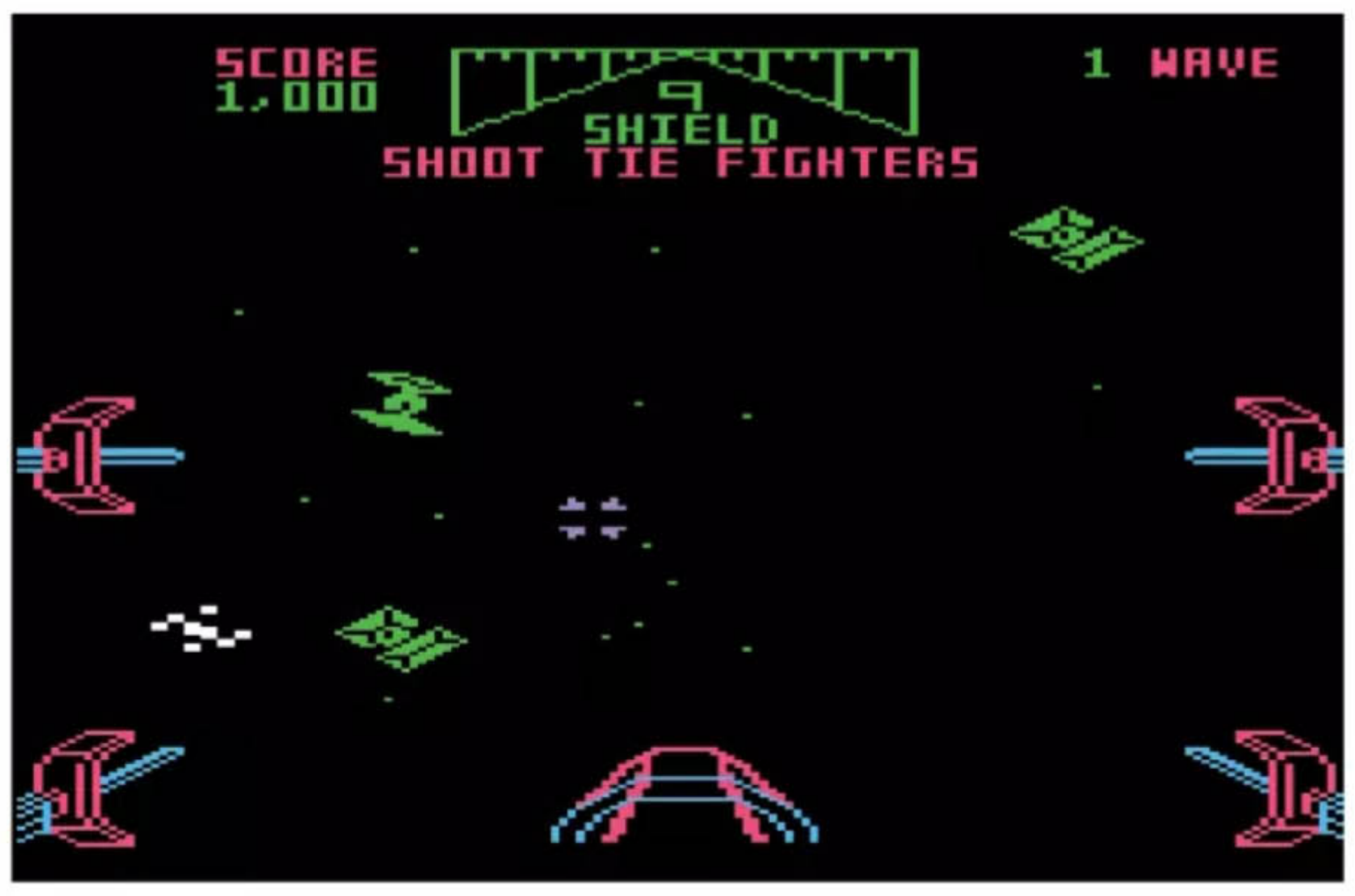
ATARI 2600

We've seen some 2600 games suffer from dreadful flicker, but this Parker effort (ironically Atari didn't have the actual rights to produce its own home version of its own coin-op) is truly atrocious. A real pity, as the actual gameplay is pretty good.


SCORE
10,825
3
SHIELD
1
USE THE FORCE
SHOOT FIREBALLS

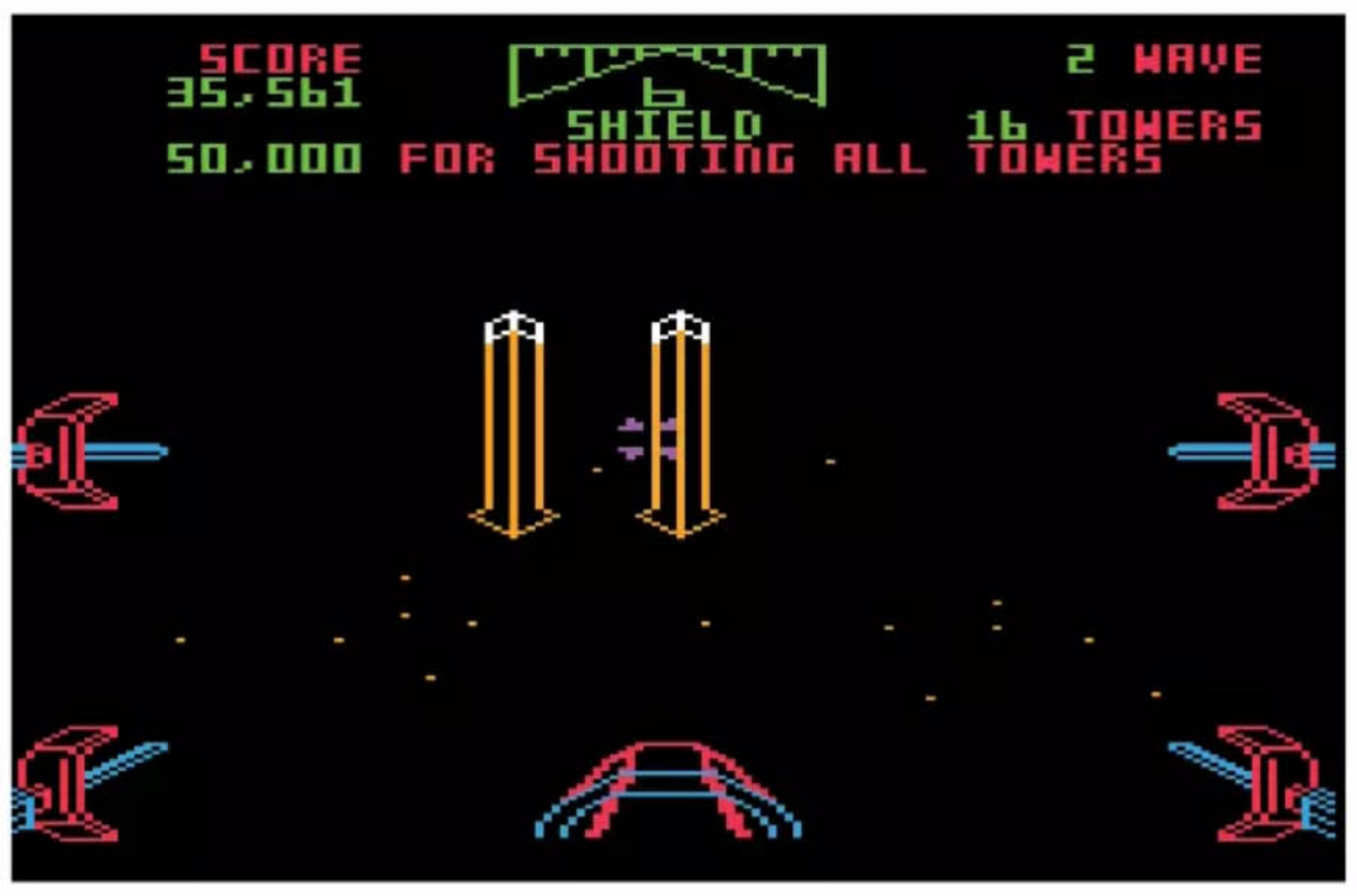
ATARI ST

While it's extremely similar to the Amiga version, Commodore's machine just clinches it thanks to clearer speech (there were more samples on offer as well) and sound and far smoother, slicker visuals. It's still a strong conversion of the classic game.


SCORE
1,000
9
SHIELD
1 WAVE
SHOOT TIE FIGHTERS

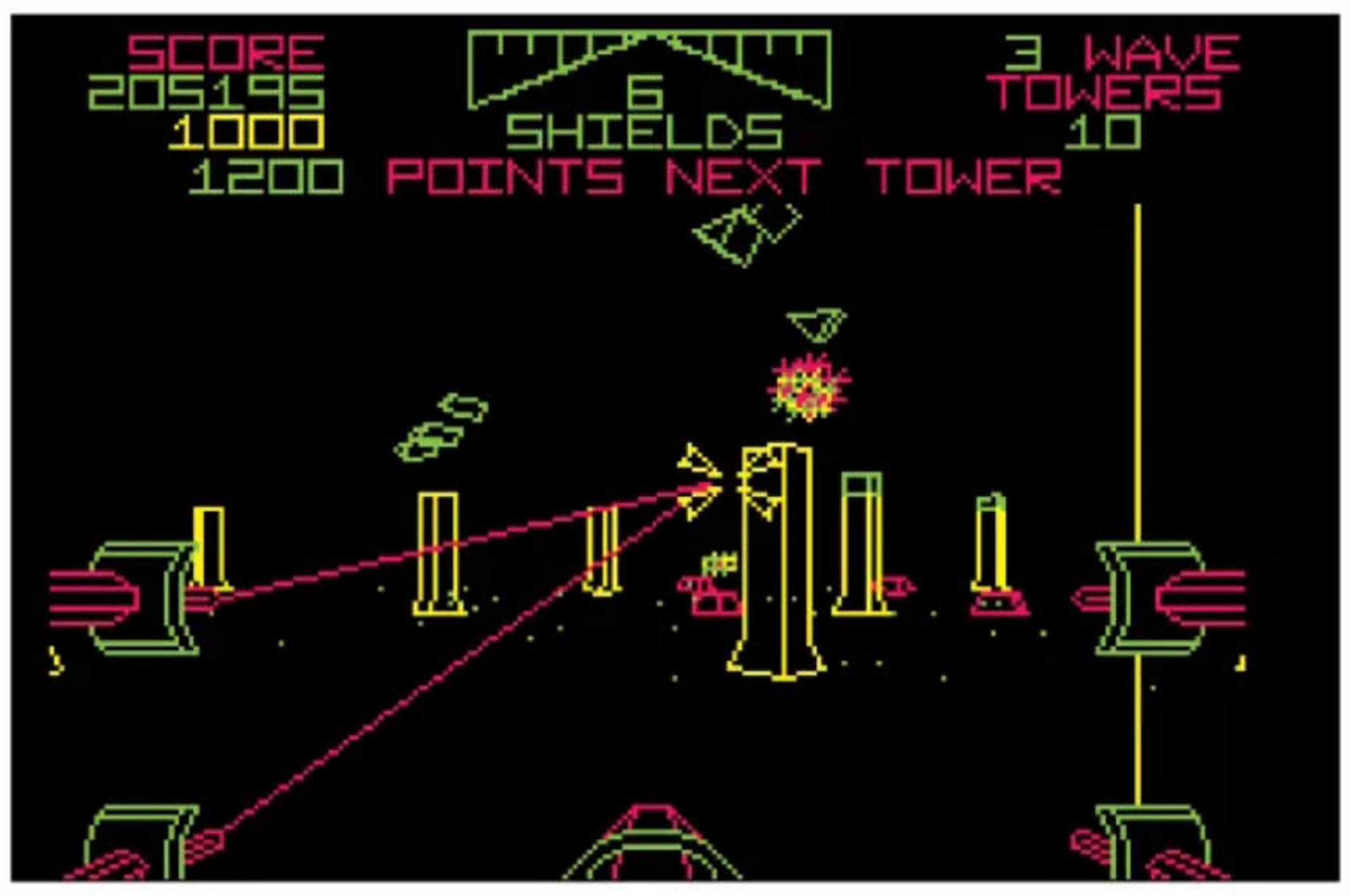
ATARI 5200

Although it boasts some decent visuals, it's very hard to recommend this 5200 effort, mainly because of the truly horrific collision detection that rears its head throughout the game. It's incredibly frustrating to watch TIE fighters not get blown apart.


SCORE
35,561
6
SHIELD
2 WAVE
16 TOWERS
50,000 FOR SHOOTING ALL TOWERS

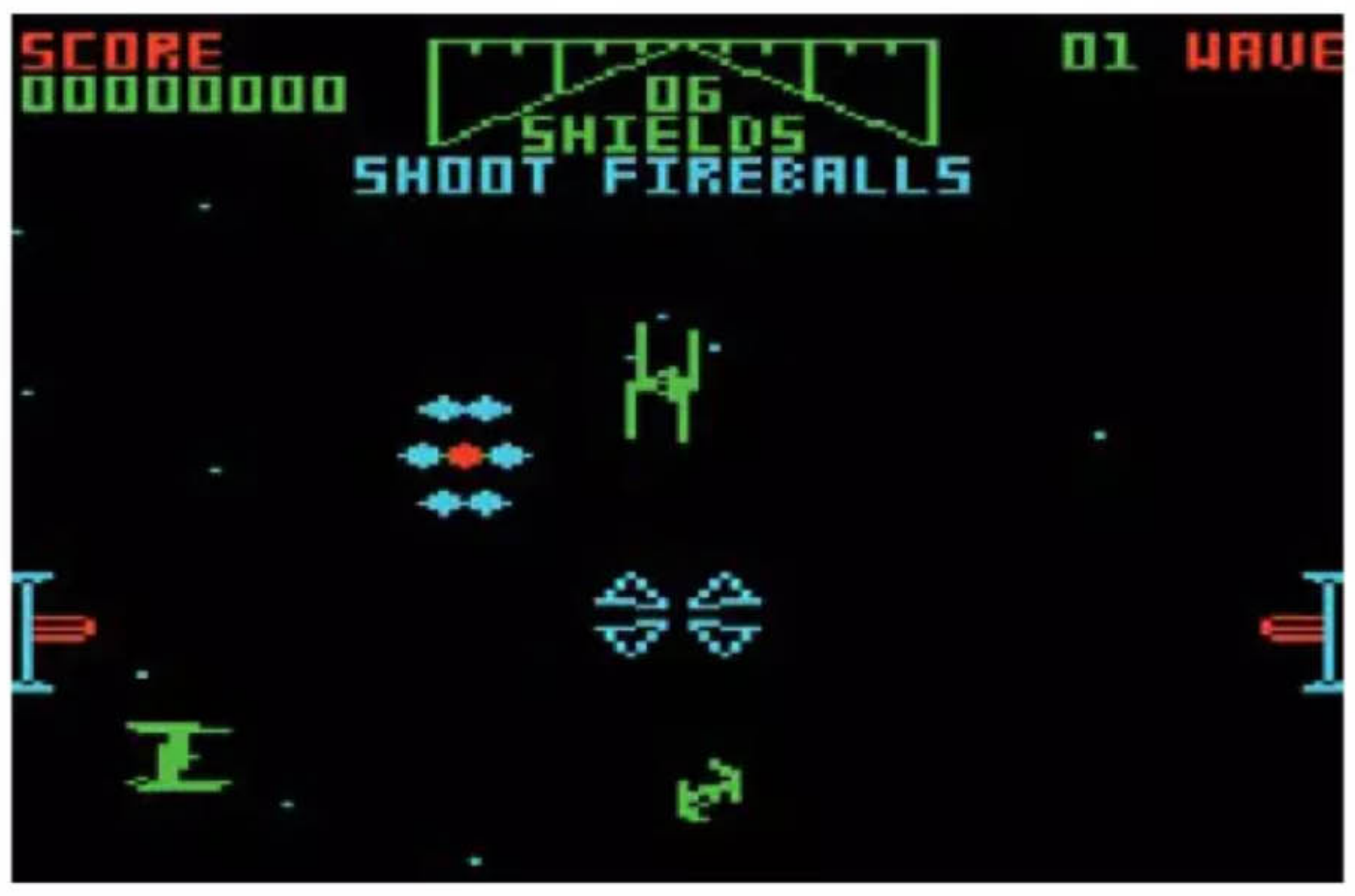
ATARI 8-BIT

Although there's a fair amount of flickering on display – although nowhere near as bad as the 2600 version – this is a surprisingly good conversion and nips along at an incredibly fast pace. In fact, after some extensive play it's probably become our favourite 8-bit version.


SCORE
205195
1000
6
SHIELDS
3 WAVE
TOWERS
10
1200 POINTS NEXT TOWER

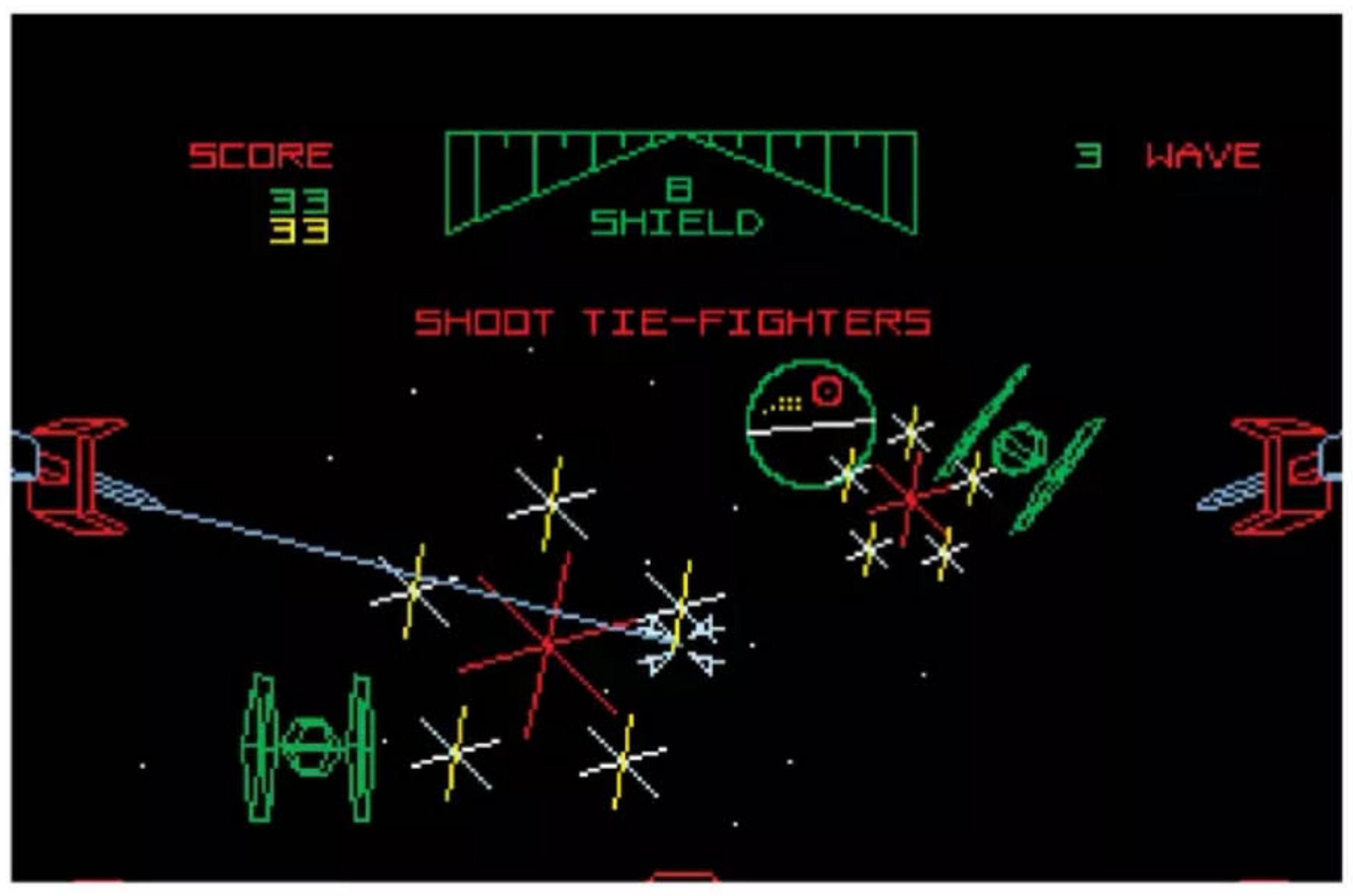
DOS

Its limited colour palette means that it's unable to match the sheer vibrancy of the Amiga and ST versions and the sound is rather disappointing, but this is otherwise a fairly solid conversion. It plays at a decent pace and has great control.


SCORE
00000000
06
SHIELDS
01 WAVE
SHOOT FIREBALLS

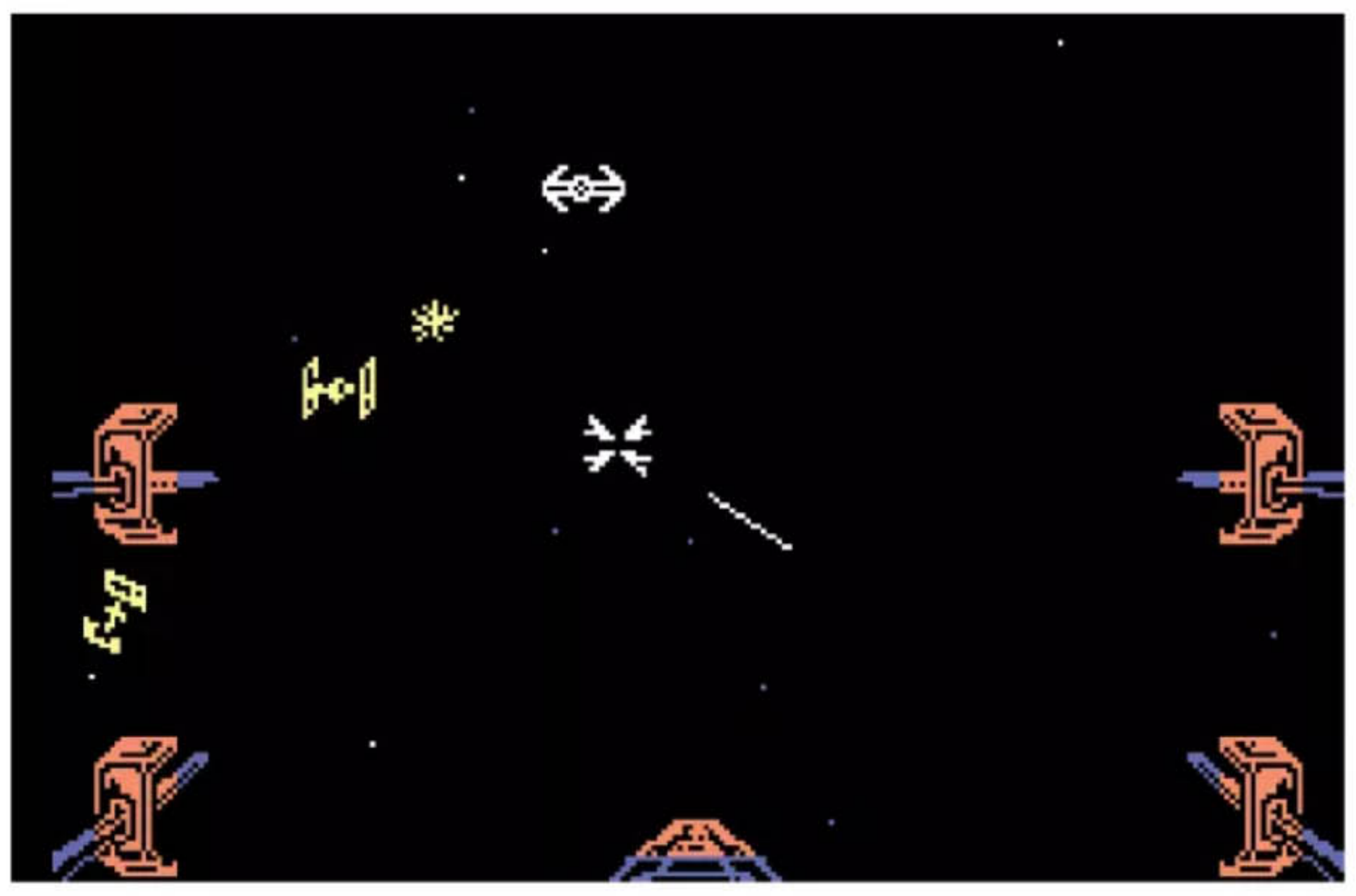
BBC MICRO

We were pleasently surprised by the BBC Micro version of *Star Wars*, as it's actually pretty darn slick. Faster than many of the other 8-bit versions, with visuals that are somewhere between the Commodore 64 and Amstrad outings.



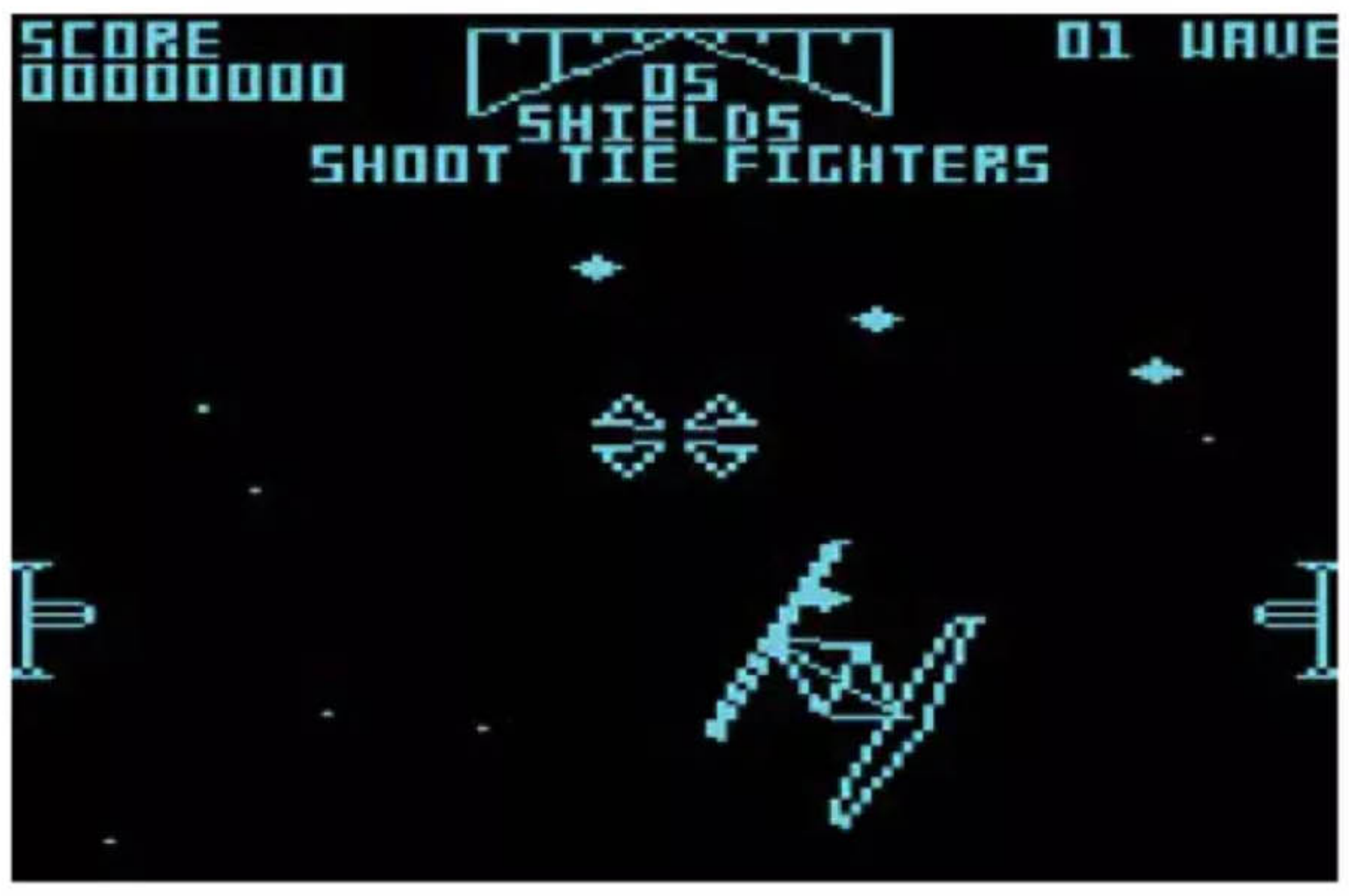
AMIGA

Many purists will argue that this is actually superior to the original arcade game, and it's actually very easy to see their point. Mouse control gives you amazing accuracy over your cross hairs; the graphics are extremely faithful to the 1983 coin-op.



COLECOVISION

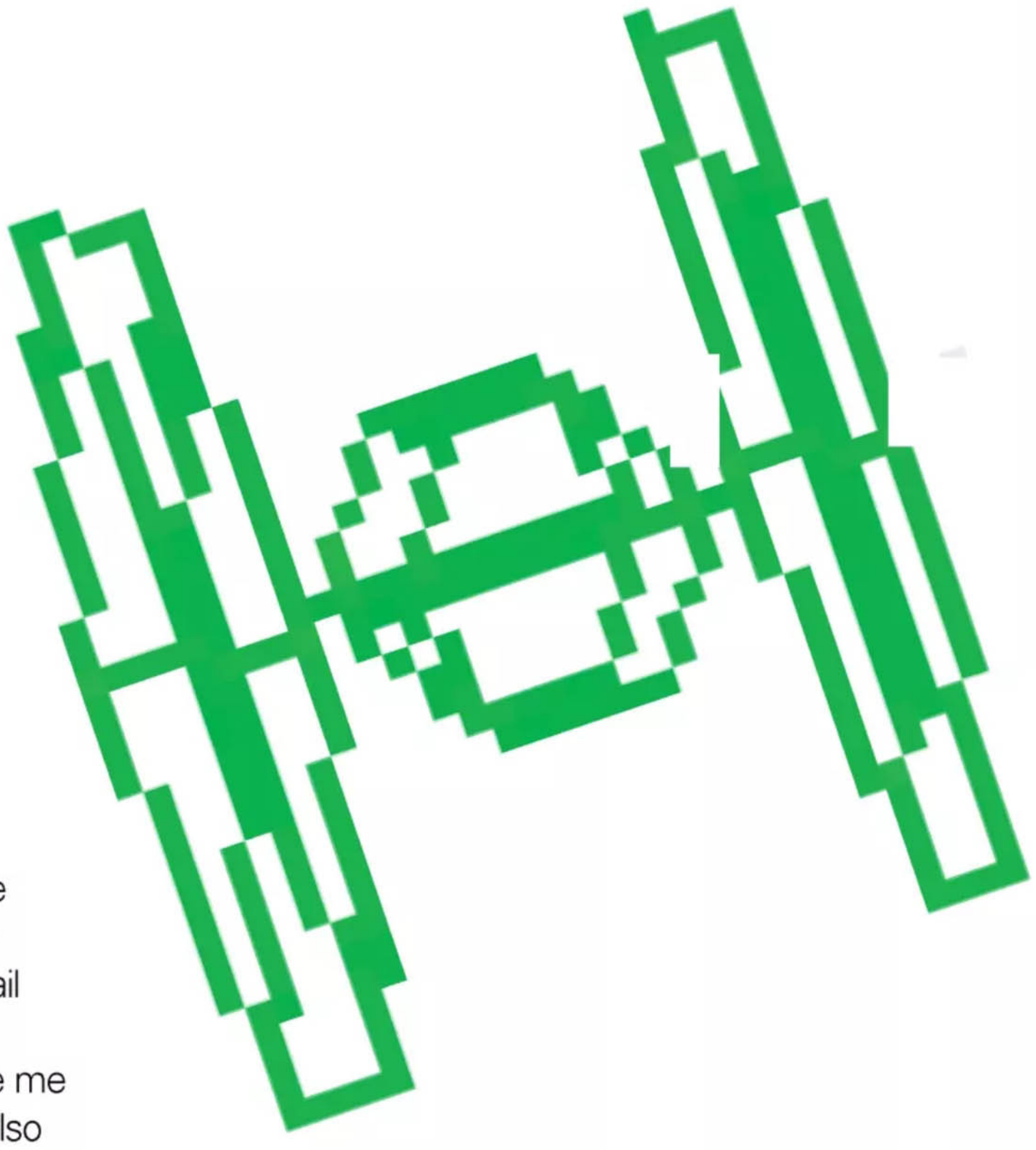
This is so much better than the 2600 and 5200 ports that it's not funny. Boasting far superior visuals, little flicker and solid controls, this is easily one of the better conversions that's available on the earlier systems available.



ACORN ELECTRON

Like many Electron titles, this game plays like a slightly senile relative of the BBC Micro version. It's comparatively sluggish making it very difficult to target the fireballs, but generally it's as faithful as Electron owners could expect.

on… and let's not forget the most important issue of all… this game needs to be fun for every type of gamer out there whether casual or hardcore." Of course, the blessing and curse of being able to create a *Star Wars* game was having access to that actual licence, for while it potentially meant that the game would receive a crucial head start in the arcades, it would also mean that the project would be constantly under the steely eye of George Lucas.



Under a watchful eye

"From the initial meeting with the licensing group to all the follow-up meetings with the games department group there was one consistent theme that the Lucasfilm groups had… they were all very protective of the *Star Wars* universe and every detail had to be accurate," continues Mike. "If I had any element that was not accurate, they instantly made me aware and it had to be changed. Since they were also involved in game development, they did understand some of the decisions that I made."

The team was given a tremendous amount of resources to draw upon and had access to virtually every aspect of the film. They were sent a copy of the original script, numerous toys from which to draw inspiration and plenty of original sketches that pretty much covered every element of the movie. All the music was available for reference – as were numerous voice scripts – the only caveat was that every little detail had to be fed back to the protective publisher.

"The process used to keep them [Lucasfilm] in the loop was to invite them down to Atari to view game development until we had a system that we located on their premises," begins Mike, about the gruelling process. "I would take new ROMS (memory) up to Lucasfilm and replace them in the hardware along with a list of new features this version of the program contained. I would always give a demo of the current game design and discuss what would be coming next. They had to approve all game text, copyright information, cabinet artwork, operator manual and so on. Just think of all the money this company has made on licensing books, games and toys. My last memory of working with Lucasfilm on this project was driving the Atari truck to the ranch to drop off a production cabinet, which was part of the licensing agreement. It was a great feeling knowing that we had accomplished so much and everyone was really pleased with the final outcome."

> "EVERYONE ON THE TEAM CRACKED AT ONE POINT DURING DEVELOPMENT"
>
> MIKE ON PRESSURES FACED BY THE TEAM

Although Mike has fond memories of Lucasfilm, he'll be the first to admit that working with a company that had such a fastidious attention to detail meant that sometimes they weren't always on the same wavelength. A typical example is a memo posted on Jed's website, which shows a list of small and seemingly petty changes that Lucasfilm was adamant on having corrected. One note insisted that shields were made of energy, not metal, as pilots wouldn't be able to fight if a sheet of metal obstructed their view whenever they were fired upon, while no 'gunner exists in an X-Wing because it is piloted by a single person with the help of an R2 unit'. The best, however, was a chastising for using the term 'parcels' instead of 'parsecs', which was then followed by a long explanation saying that even this wouldn't be the appropriate term as even a single parsec would be 3.26 light years and the Death Star wouldn't be visible at that range. With no Earth term being suitable it was suggested that 'light tics' should be used instead. Fortunately, Mike always took these requests in good humour.

"I remember laughing to myself because they were overly consumed with these little tiny issues and we had been worried about some other much bigger issues," Mike recalls about that particular memo. "The team was really relieved to hear back from Lucas and we were glad that their main points were so minor."

While Lucasfilm proved to be far more receptive than the team had originally anticipatedd, Mike and the rest of his hard-working crew nevertheless found themselves constantly under pressure due to the sheer amount of interest that the potentially lucrative licence was constantly generating at Atari. "Oh it never stopped," continues Mike about the many challenges that he and the rest of the team found themselves constantly facing as work on the game continued. "There were two main areas of extreme pressure. One was from the company and their need for this game to get finished and be a huge success, while the other was internal pressure from within the team to be a part of something special and make a name for ourselves. I think every development team at Atari was under a lot of pressure to perform and create magic, but the *Star Wars* coin-op was a new and different venture for us so it just magnified the expectations everyone had. Everyone on the team cracked at one point or another during the development but we all stood the test of time. We eventually went on to work on many other games together so I would have to say that as a team we overcame the fear of pressure and learned to actually enjoy it."

“Do or do not. There is no try”

When you consider how popular *Star Wars* now is, it’s difficult to imagine how the eventual coin-op could have ever been seen as anything less than a huge hit. However, when you look at the type of games that were available at the time, the fact that it was released in what would become one of the most trying times for the industry (the great videogame crash) and the technology that Atari was striving to perfect, it’s no real surprise that it wasn’t always plain sailing. While this wasn’t the first vector graphics game that Atari had worked on, it was going to have to be sufficiently more fast-paced than the rather sedate speed of *Battlezone* if it was to capture the exhilarating excitement of the film’s final battle. Luckily, this is where Jed’s efficiency became readily apparent and the talented programmer ended up making the visuals a little too spectacular.

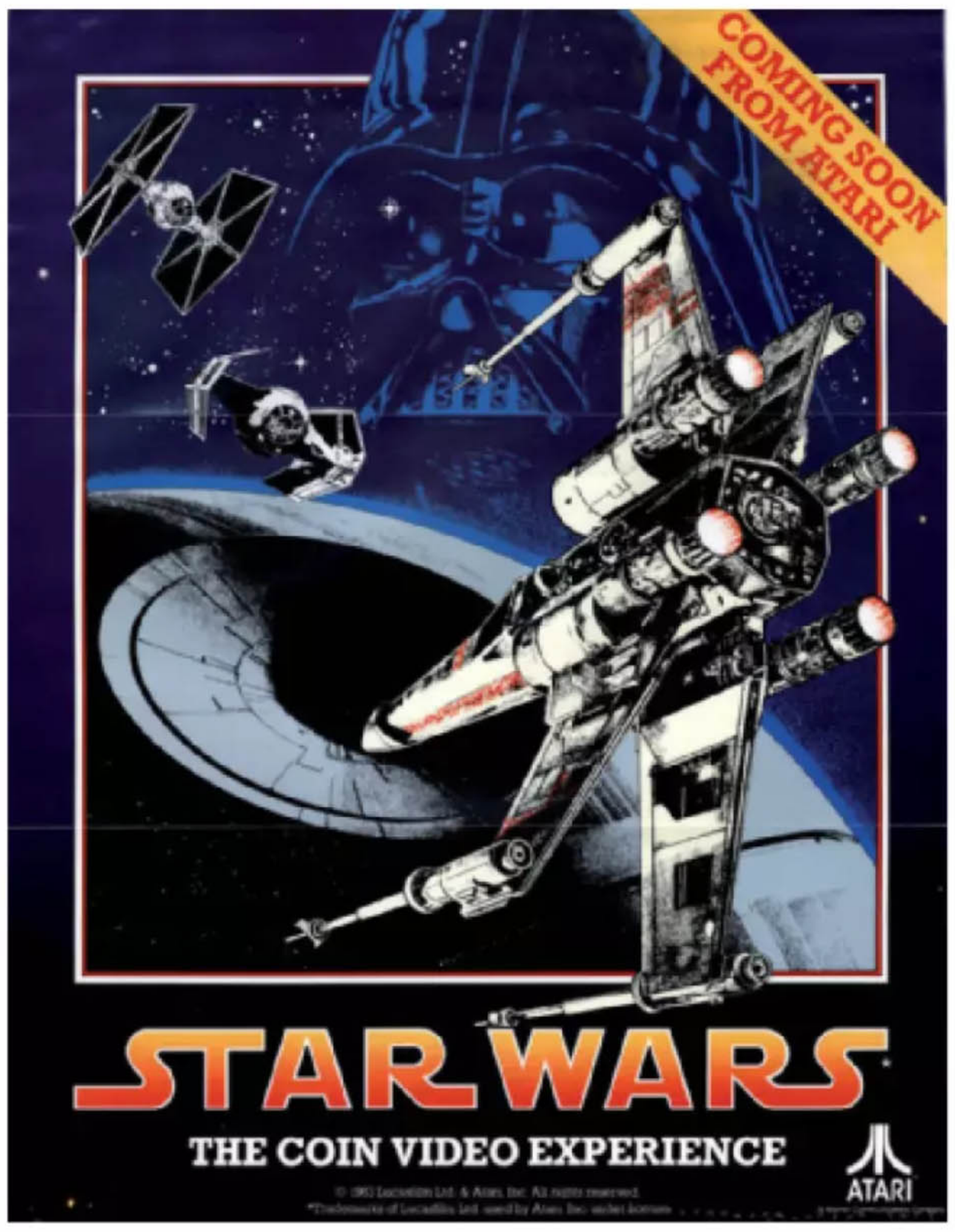
> “IT HAD THE RIGHT MIX OF ALL THE ELEMENTS IT TAKES TO MAKE A WINNER”
>
> MIKE ON WHY STAR WARS WAS A SUCCESS

“Originally, the 3D math that *Star Wars* was capable of performing allowed any object (and the observer) to be in any orientation,” confirms Jed. “However, it was eventually decided that players might be confused by being approached by an upside-down TIE fighter, so they were forced to be right-side up most of the time.” We ended up going with vector graphics because Atari felt that they were best suited to *Star Wars*’ development and what it required based on the original game designs,” continues Mike when we asked him about the game’s distinct look. “It was one of the first three-dimensional games and at the time it was the only display that we had access to that [could] pull off what we wanted to achieve. At this time in the evolution of videogames almost every coin-operated game had its own custom hardware to maximise the needs for the specific requirements of the game.”

Despite the difficulties all of the hard work eventually paid off in rather spectacular style. Few gamers will forget the first time that they saw a whole squadron of TIE fighters roar past them, or how they sat entranced as they watched the towers they were blasting at spin crazily around until the Death Star’s ominous looking trench was formed. Massive fireballs exploded in front of your very eyes, Vader’s TIE would swoop ominously around the screen, impervious to your firepower, while later runs through that dangerous trench had you dodging numerous barriers that speed towards you at ever-quickening speeds. The simplistic-looking, but oh so striking, vectors created a beautifully immersive atmosphere that was further enhanced by the carefully picked snatches of music and speech that played.

“The Force will be with you, always,” “Yahoo”, “Use the Force” and “You’re all clear, kid” were just a small number of the classic lines that featured and the experience was only heightened by John Williams’ wonderfully rousing – if shortly looped – score. For many though it was the beautifully crafted sit-down cockpit and cabinet that helped to give off that true *Star Wars* experience. And amazingly, it almost didn’t happen.

The cabinet was initially equipped with a joystick, but early testing revealed that it confused people, as they didn’t know which way to move it. Still, those early test periods proved crucial as it allowed Mike and the rest of the team to secure extra money for a far more suitable controller. “The control yoke for *Star Wars* was a downsized version of the control from *Army Battlezone* (minus the palm switches), which came directly from an actual Bradley Fighting Vehicle (it was the gunner’s control),” explains Jed about the unusual controller’s original origins. “I wanted it to be based on every child’s experience with riding a bike,” continues Mike. “It was all about putting both your hands on the handles and pressing the triggers. Everyone immediately knows what to do and no one ever forgets. It was the perfect player input to play the game and really feel in total control of what you were attempting to do.”



» Atari kept interest in *Star Wars* high by systematically releasing eraly, tantalising flyers.

Feeling the force

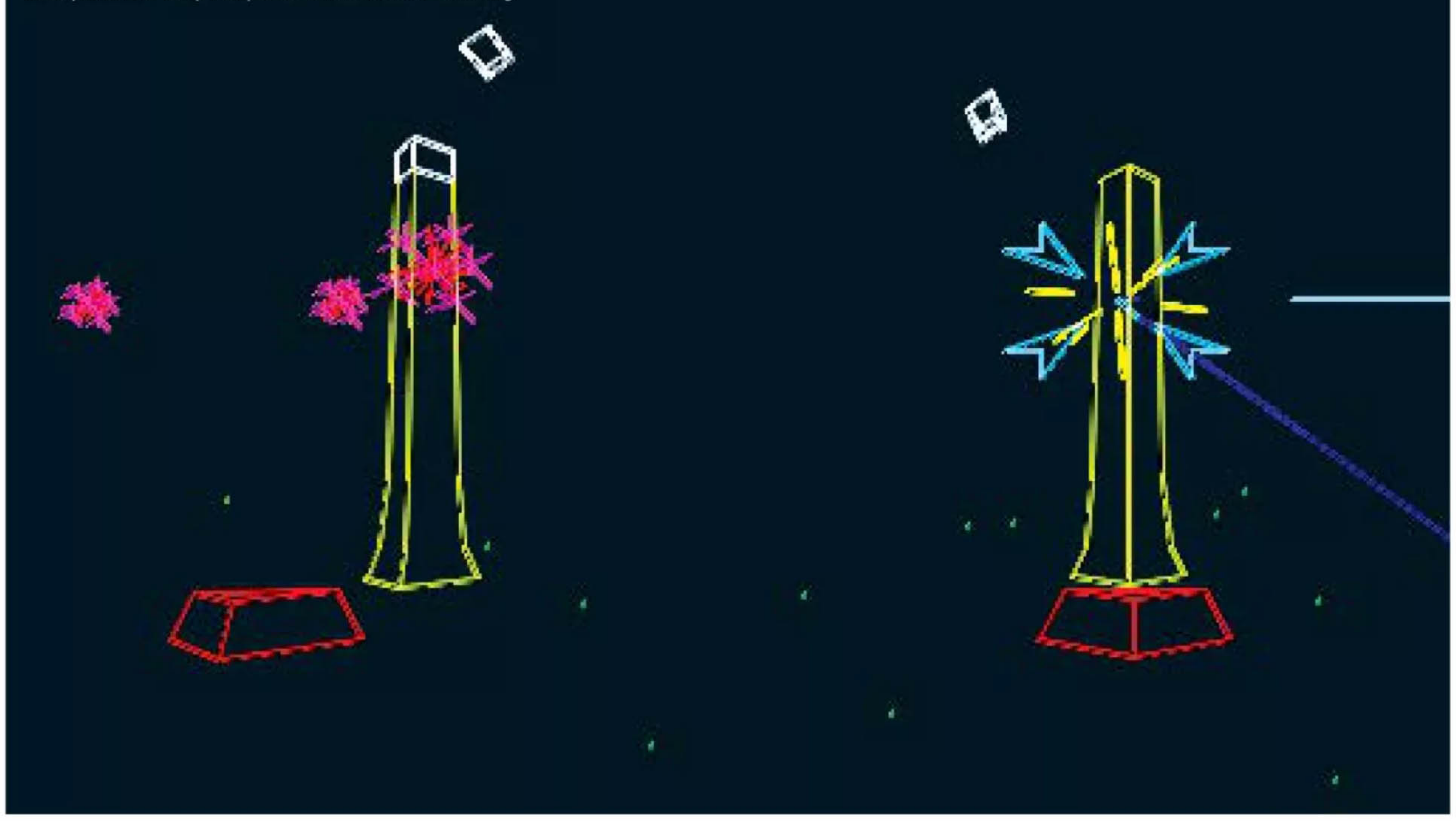
Although the device helped give the finished game that final touch, it was far from perfect as Jed reveals, which explains why the centring for the control yoke isn’t always perfect. “*Star Wars* originally used a Pokey to read the pots,” he reveals. “At that time, people either made their own A/D converter with a counter, a comparator, and a ramp, or they used Pokey. The Pokey was a full custom IC designed for the Atari 800/400 to read pots and keys, which gave it its name, ‘POTs’ and ‘KEYs’. Unfortunately, Pokey does a really awful job of reading pots; it is guaranteed to produce occasional wrong values. The software to deal with it is pretty

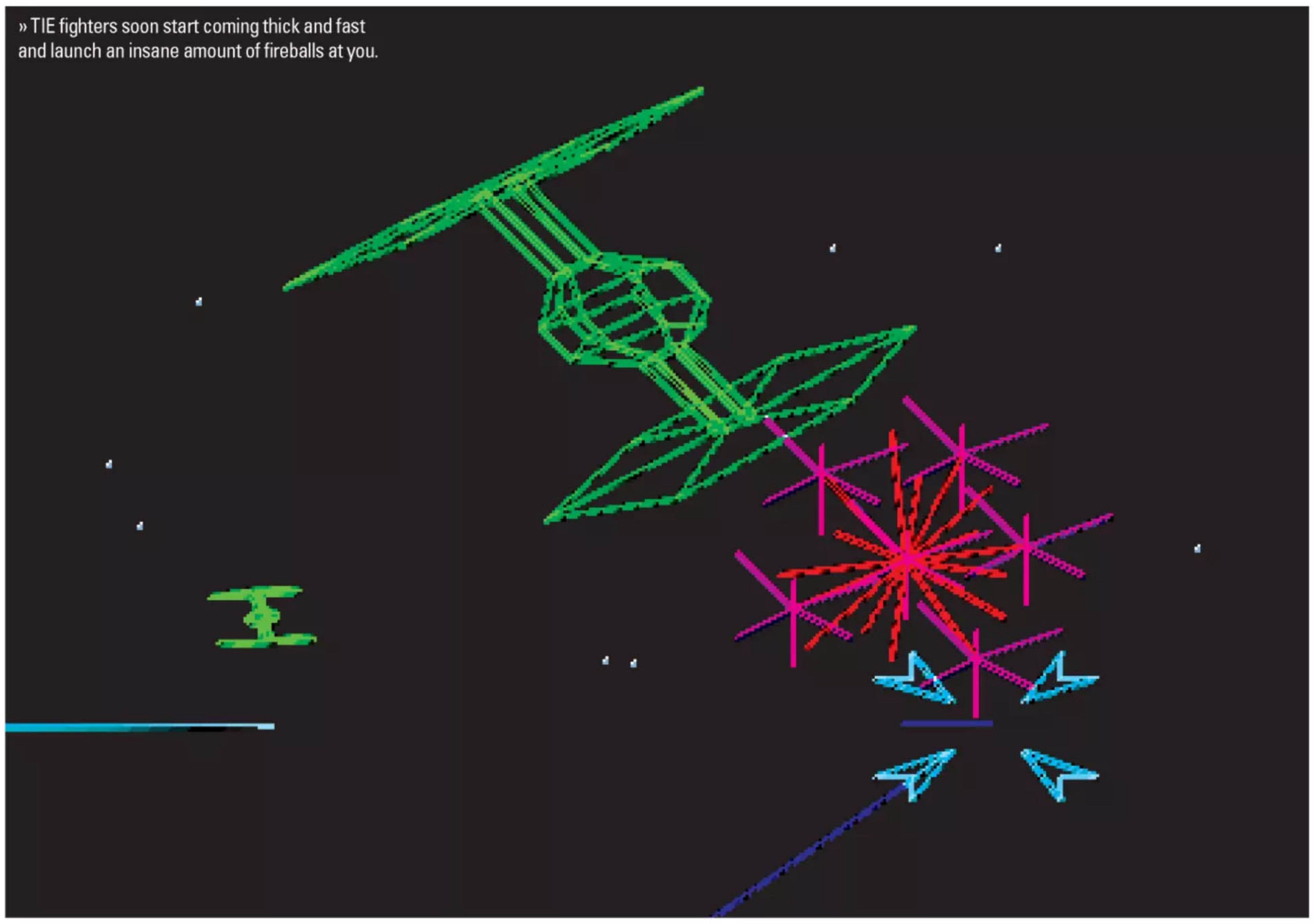
MAKING THE CUT

It’s rare when all the ideas during the development process make it into the final game and *Star Wars* was no exception. While Mike is more than happy with the end product, a number of ideas never actually made it into the final game. Initially it was going to be possible to have two machines linked up – a throwback to Jed’s original *Warp Speed* pitch – but it never happened. While the idea was going to be finally implemented in the sequel, it never came to be.

Perhaps the biggest change that never appeared in the final release was the idea of a timer that would appear in the form of diminishing fuel. Blowing up the Death Star would result in you being rewarded with a completely new fuel bar, while failing to hit the exhaust port would simply see you carrying on the next stage with whatever fuel you had left. It’s certainly a bold concept and is a great way of ensuring that one person doesn’t completely dominate your machine, but we’re glad they went the other way.

» Skilled players would shoot the tops off towers in order to earn more points. It’s fairly tricky to do but well worth achieving.




» TIE fighters soon start coming thick and fast and launch an insane amount of fireballs at you.

nasty. After Greg Rivera brought this to my attention I took the daring step of actually putting in a real A/D, the ADC-0809. Unfortunately, many people continued to use the original code to treat the A/D values as though they had come from a Pokey. Like Greg. That is why the controller in *Star Wars* keeps getting re-centred."

It wasn't just the software that proved to be an issue, as creating the actual hardware wasn't without its issues either. "The device was a major undertaking for the mechanical engineering department," explains Mike. "I had started at Atari as a mechanical engineer in the Pinball Division so I knew exactly what I wanted and how it could be constructed. The entire project to get this controller into production was crazy. I remember there was a flood in the town where the moulds for the handle grips were being made, so we had to take a rowboat from one building to another to try to get some prototype handles ready for our initial field test."

> "STAR WARS CAPTURED THE ESSENCE OF ONE OF THE GREATEST PROPERTIES EVER CREATED FOR THE BIG SCREEN"
>
> MIKE HALLY

Indeed, it was field tests that proved to be essential for the success of many early arcade games and Atari was particularly adept at responding to the constructive feedback that was given at these focus groups.

"We had our very first focus group on 24 January 1983," explains Mike about the important event. "The actual gameplay on offer was very rough, as the tower and trench phases were just in the beginning stages of development. Overall though, the players thought the game had great potential and liked the idea of having voices and music playing from the movie. They also thought that a sit-down version of the game would help add realism to he experience."

Responding to the aforementioned issues with the original joystick and the need for a bigger cabinet, work on *Star Wars* continued and Mike began to tally up the final costs for creating the behemoth cabinet. Total material costs came to an expensive $1,249.00. A large amount of money for the time, but a positively insane amount of cash when you realise that Atari's game was actually going to be released in one of the industry's most turbulent times. Were Mike and the team not worried about creating such an expensive product during the videogame crash?

"Now that you ask the question it does scare me," continues Mike, "although it was not my job to make sure that the company was financially solvent. Atari had other divisions but I was not sure how the company as a whole was doing then. From my perspective, the company shelled out $1 million for the licence and I never feared for my job so I just felt everything was in fine shape. I was so busy with trying to make this game a success; I was blinded as to the decline in videogame sales for the year. I do remember feeling bad for our workers in the production building though. If we did not have product for them to build then they did not have a job for a while. I felt somewhat responsible for making sure I did what I could during my career to keep the factory running at all costs."

The beginning of a saga

Despite being released during one of videogaming's bleakest times, *Star Wars* was an immediate success and instantly became the number one selling arcade game, although sadly, this success was short-lived due to *Dragon's Lair* getting released two weeks later. Nevertheless, all the hard work, effort and cost was worth it, with over 15,000 machines being sold for a grand total of $15 million, not bad at all for a period that Jed and the rest of Atari described as 'going supernova'. Indeed, Jed is adamant that *Star Wars*' success was the main reason why the arcade division wasn't shut, and it wasn't until the end of 1983 that the team discovered that Atari Games had barely broken even, and that had included the $15 million generated by *Star Wars*.

The success of *Star Wars* meant that it was soon picked up for home computers. Domark swooped in and released some decent ports, but Mike and his team had no involvement with them. "The thing about being a part of a game development team is that once you finish one game, you roll right into the next one. In the case of *Star Wars*, Atari did a great job in licensing our game to many different home game platforms and if I'm honest I remember getting royalty cheques from them more than remembering which company did what kind of job with our finished game. Atari would always give me a certain number of copies of these games though to give out to team members, which was a class move and a nice motivator."

Although it was followed by two sequels – one with vectors, the later with sprites, which actually came out between the two vector games – neither of them ignite quite the same feelings as their superior predecessor and it's a testament to the game's brilliance and success that it's the only arcade machine we actually happen to have in the office. *Star Wars*, perhaps more than any other licence of the era, was able to offer you an immersion and atmosphere that was second to none, and it's the feeling of actually being within the film that to us, makes it so special.

"*Star Wars* captured the essence of one of the greatest properties ever created for the big screen and beyond," agrees Mike. "It allowed someone to become Luke Skywalker and play an interactive role just like what people viewed on the big screen. It had just the right mix of all the elements it takes to make a winner… For me, it's a true timeless piece of history and art."

LIGHT SIDE, DARK SIDE

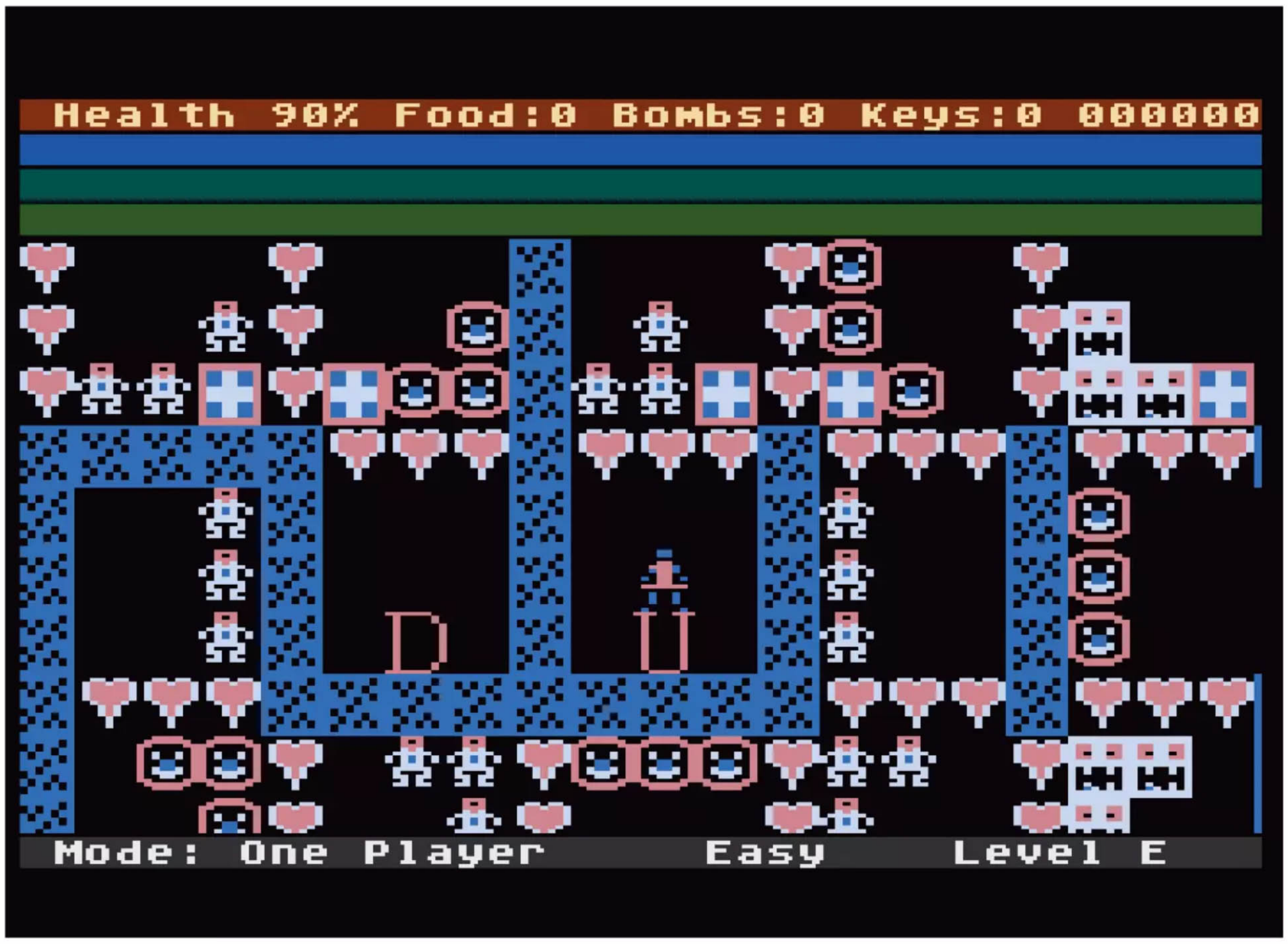
After working on such a huge project like *Star Wars*, we were keen to know Mike's favourite and worst moments about working on the classic arcade game.

"One of my biggest thrills was my trip back to New York where I did radio and television spots with our marketing department," Mike recalls. "It was kind of like being a rock star. I was on a television show and got to show off *Star Wars* in a sit-down cabinet that the whole world saw. It was exciting and a very new world for me to be a part of. Receiving my first six-figure bonus cheque at the age of 28 was also a moment that I will never forget. I still remember my body trembling when I opened up the envelope and saw that big number."

But what about the worst moment, Mike? "That's easily the toughest question you've asked me," he begins. "There were definitely many times that I was so tired and fed up with everything that I just wanted to either die or quit, but then something good would always happen. If I'm honest, I can't really remember any one horrific moment. It's funny how things change when you have success, as all you can ever remember are the good times."

THE MAKING OF DANDY

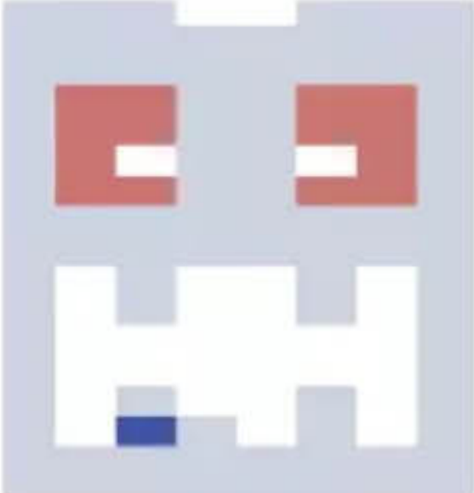
IT MAY BE OBSCURE BUT, AS GAUNTLET'S MOST PROMINENT INFLUENCE, DANDY IS GRANDFATHER TO DOZENS OF DUNGEON CRAWL GAMES. CRAIG GRANNELL TALKS TO DANDY CREATOR JACK PALEVICH ABOUT HOW IT BEGAN

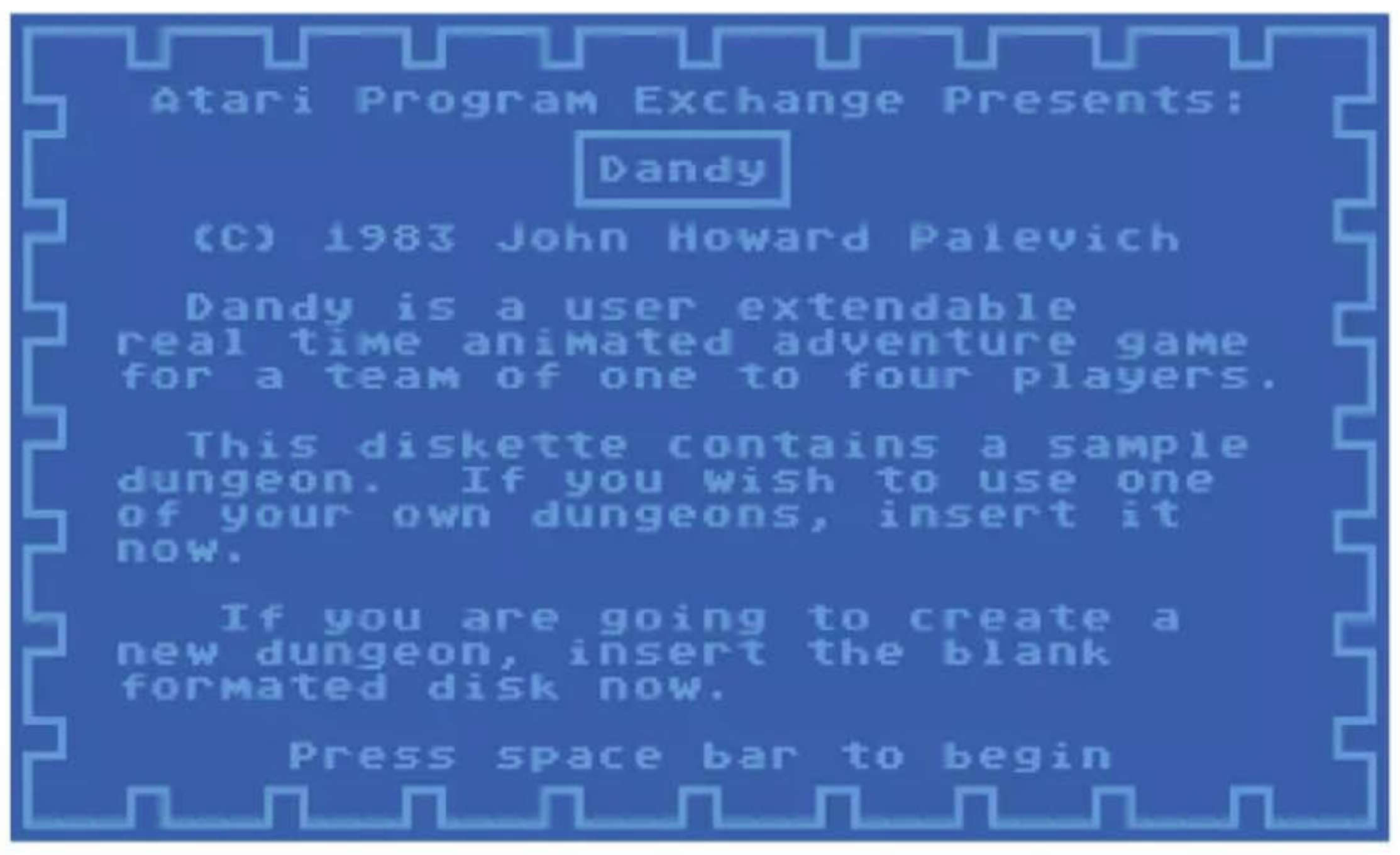


```
Health 90% Food:0 Bombs:0 Keys:0 000000
Mode: One Player      Easy    Level E
```

IN THE KNOW

- **Publisher:** Atari Program Exchange
- **Developer:** Jack Palevich
- **Platform:** Atari 8-Bit
- **Year released:** 1983
- **Genre:** Arcade Shooter
- **Expect To Pay:** £10+ ($12+)





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Atari Program Exchange Presents:

Dandy

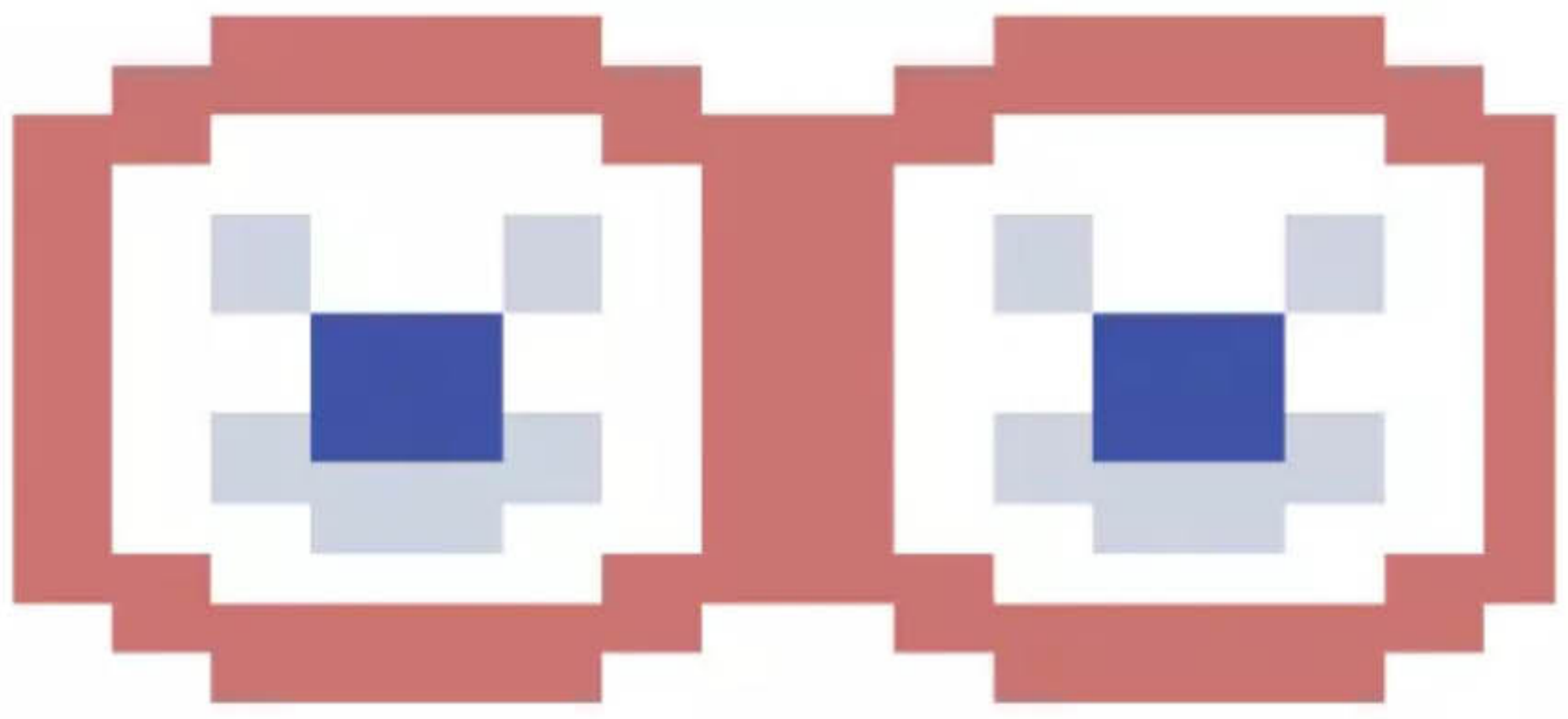
(C) 1983 John Howard Palevich

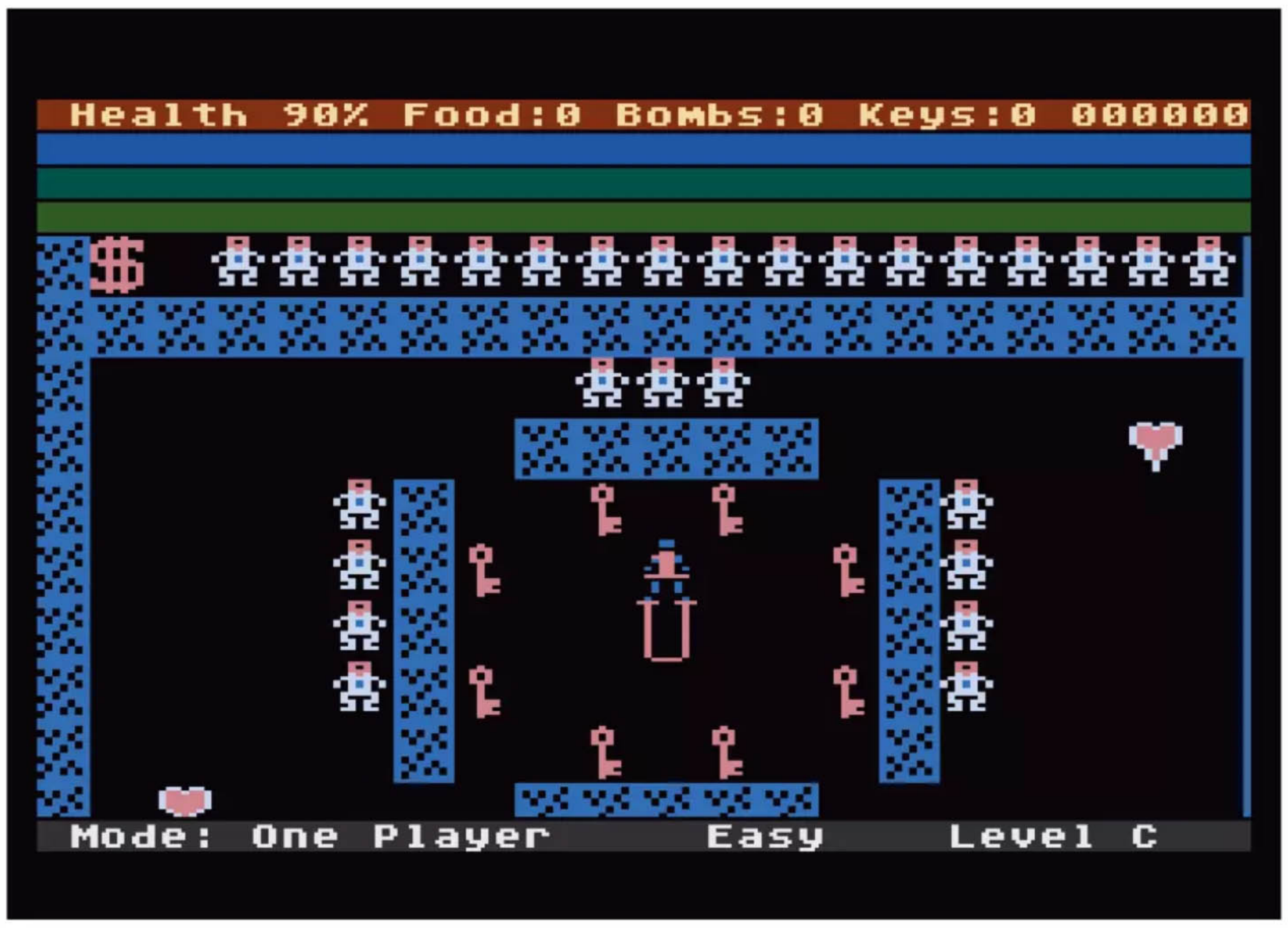
Dandy is a user extendable
real time animated adventure game
for a team of one to four players.

This diskette contains a sample
dungeon.  If you wish to use one
of your own dungeons, insert it
now.

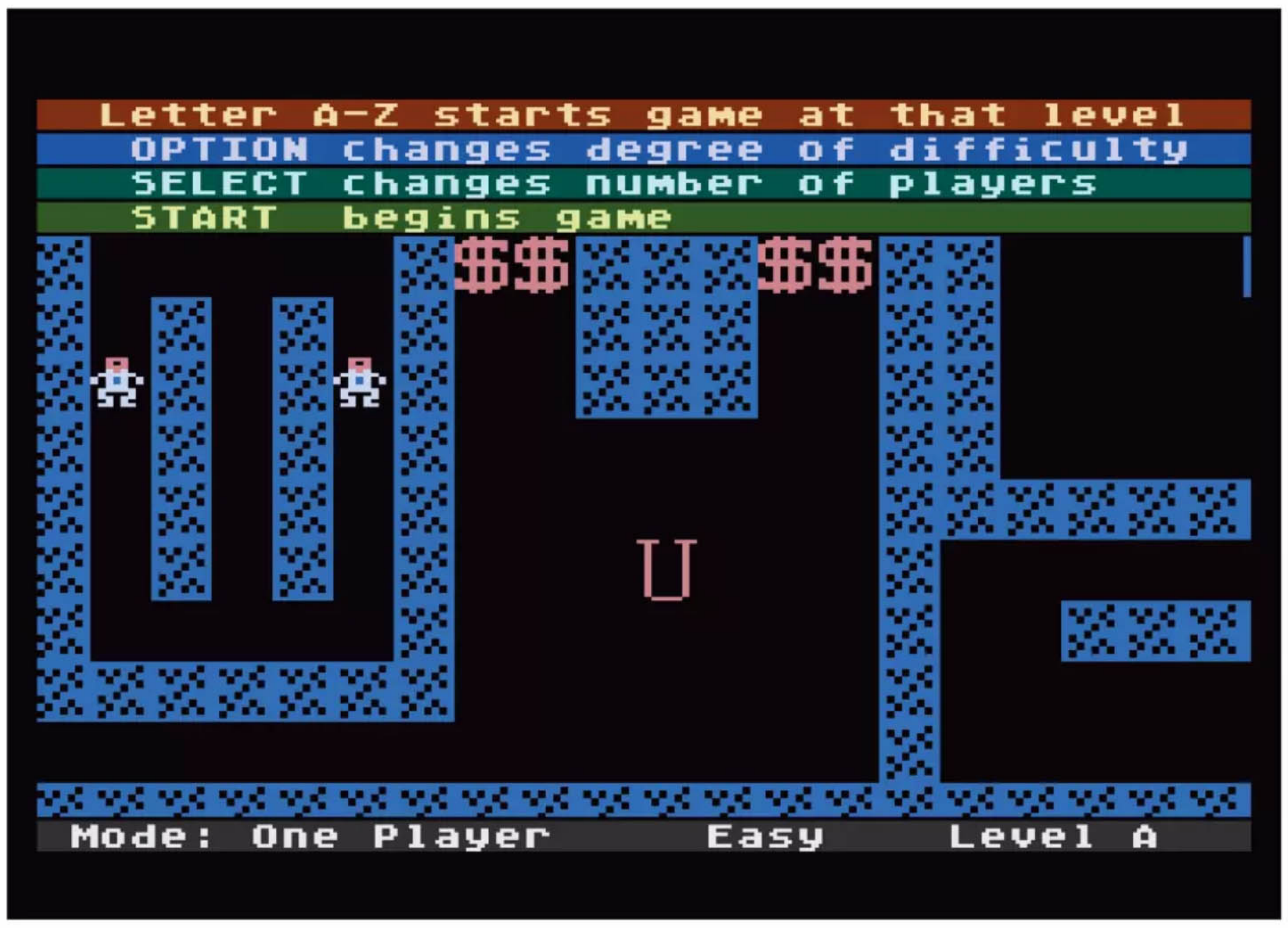
If you are going to create a
new dungeon, insert the blank
formated disk now.

Press space bar to begin
```





```
Health 90% Food:0 Bombs:0 Keys:0 000000
Mode: One Player      Easy    Level C
```



```
Letter A-Z starts game at that level
 OPTION changes degree of difficulty
 SELECT changes number of players
 START  begins game
Mode: One Player      Easy    Level A
```

A sprawling labyrinthine dungeon crawling with deadly monsters, belched out by generators. Keys that unlock secured areas of the dungeon. Four brave and hardy warriors, intent on reaching the dungeon's lowest levels, using only their wits, paltry weapons and sporadically found food to aid them.

This might sound like Atari's hit arcade game *Gauntlet*, but we're talking about Dandy (also known as Dandy Dungeon), a top-down, RPG-inspired, dungeon-based shooter, released for Atari 8-bit systems. And before anyone yells "clone!", *Dandy* arrived a full two years before *Gauntlet* – the arcade game is the clone.

The beginning

Dandy's story begins at the Massachusetts Institute of Technology (MIT). In 1982, Jack Palevich was investigating ideas for his undergraduate thesis. A keen programmer from an early age, Jack initially considered writing an Atari 800 emulator for the MIT CADR Lisp Machine. "It would have been one of the first personal computer emulators," maintains Jack, "but after my thesis advisor stopped laughing at the absurdity of using a $100,000 machine to emulate an $800 machine, he asked me to pick another topic."

Along with an interest in computers, Jack liked co-operative gaming, and set about combining the two. "I never played any RPGs," he admits, adding that he didn't have the time, and had far too much fun programming, "but I'd bought the manual sets and watched other people play. I decided I wanted to recreate dungeon exploration pen-and-paper role-playing games on a computer, including the important team-based element".

Influenced somewhat by the Xerox Alto Maze War game – which Jack calls "the very first multiplayer LAN-based FPS" – in addition to various top-down maze-based arcade games, *Dandy* slowly came together.

"My initial plan included an active dungeon master, at a second computer, who controlled the dungeon, and sent in waves of attacking monsters," reveals Jack, who also invented various foes to roam the dungeon, hand-to-hand combat involving lightsabers, magical weapons, start and end movies, and an ambitious 3D viewpoint, "but I only had three months to write the game, while also still going to classes."

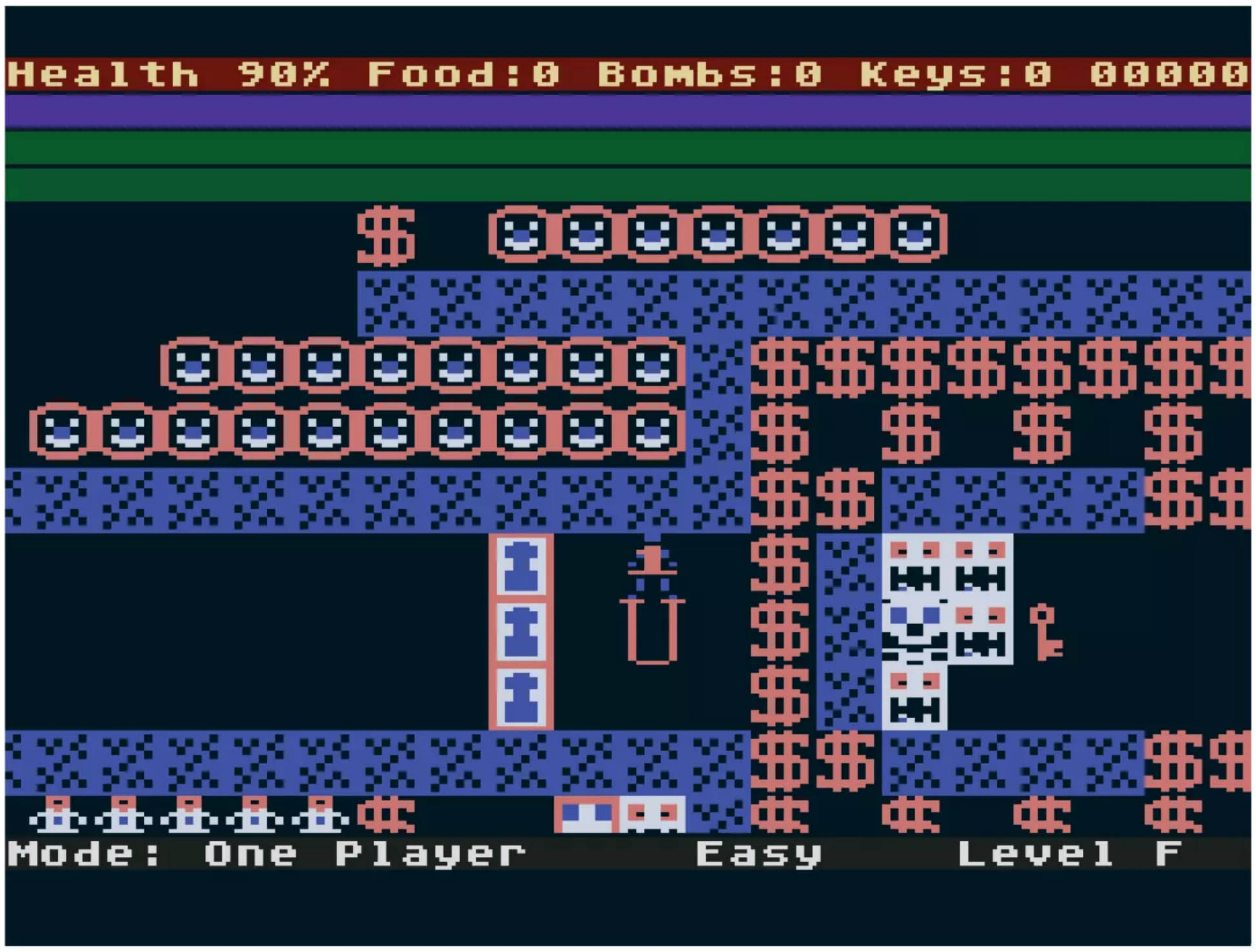
Dandy was subsequently scaled back to meet the tight deadline. The 3D viewpoint was scrapped in favour of simpler 2D levels, and many other components were simplified or removed. Arguably, though, the biggest change was to *Dandy's* benefit. "Due to time-pressure, the dungeon-master console devolved into a simple file server, and once it was just a file server, it made sense to use the Atari 800's floppy disk," says Jack. The importance of this change can't be overstated – *Dandy* suddenly shifted from a complex, multi-computer gaming environment (which, admittedly, was ahead of its time, but unlikely to enable *Dandy* to achieve widespread popularity) to a tightly honed single-machine multiplayer videogame, combining RPG elements and arcade action.

Jack admits that although time pressure often forced his hand, he was by this stage already increasingly thinking about gameplay: "Many of *Dandy's* changes happened in response to playtesting feedback. For example, I used to save a level's state when you left it, so you could go back, because the original idea was for players to go to the bottom level and then return back up. But nobody ever went up, except by mistake, so I took that feature out."The inclusive nature of the development also led to another standout feature: a level editor. "That was a happy accident," admits Jack. "The first thing I did with *Dandy* was create a big, empty level with a man running around it. On playing the level, it occurred to me that if I had the man leave a trail of shapes, I could use that as a simple paint program to create a level editor."

Design a dungeon

With *Dandy* having a level editor right from the start, Jack was able to get friends to design levels, easing pressure when his own ideas ran dry. "I used a letter to display the level name, and so it seemed reasonable to have 26 levels, but I ran out of ideas long before the end – one level's my signature, 'Hackerjack', and another's a picture of my dog!" Despite the occasional iffy design, Jack considers some of his *Dandy* levels a success: "My favourite is the first level, which was one of the first I designed, as a tutorial on how to play the game. I'm also proud of the final 'Heaven' level, and like the idea of a level full of treasure that endlessly repeats."

Elsewhere, Jack set about fine-tuning the dungeon's contents: a mix of walls, monsters, food and devices to aid players. The monster mechanic in *Dandy* was unique at the time: often appearing from spawners, monsters attack in swarms; monsters also come in three sizes, devolving to the next size down when shot, becoming less deadly. Shoot the smallest monster type and it dies. Much of this design was technically driven, as Jack explains: "Once I decided on allowing a level editor, I wanted to ensure every possible level just worked. I didn't want auxiliary data structures that might limit how many monsters you could use. I wanted to have all the state of the game stored in the 2D array that was used to display the level. So each monster was represented by a single number, which was used directly by the Atari hardware to draw the monster's graphics. When a strong monster took damage, I'd



```
Health 90% Food:0 Bombs:0 Keys:0 00000
Mode: One Player        Easy       Level F
```

» You'll be collecting all sorts of things in *Dandy*, so don't miss your chance to pick stuff up.

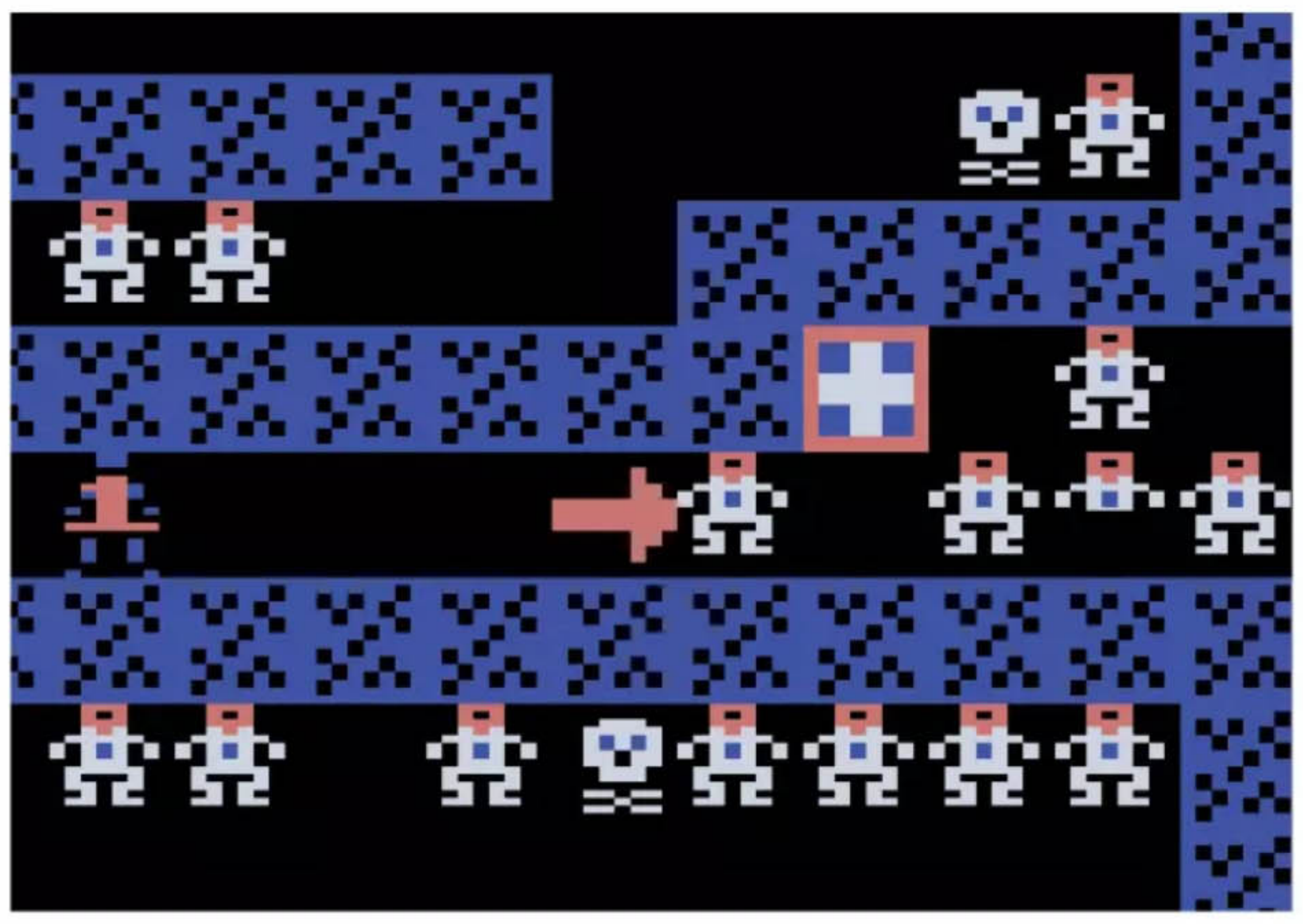
DEVELOPER HIGHLIGHTS

Caverns Of Mars
System: Atari 8-Bit
Year: 1981

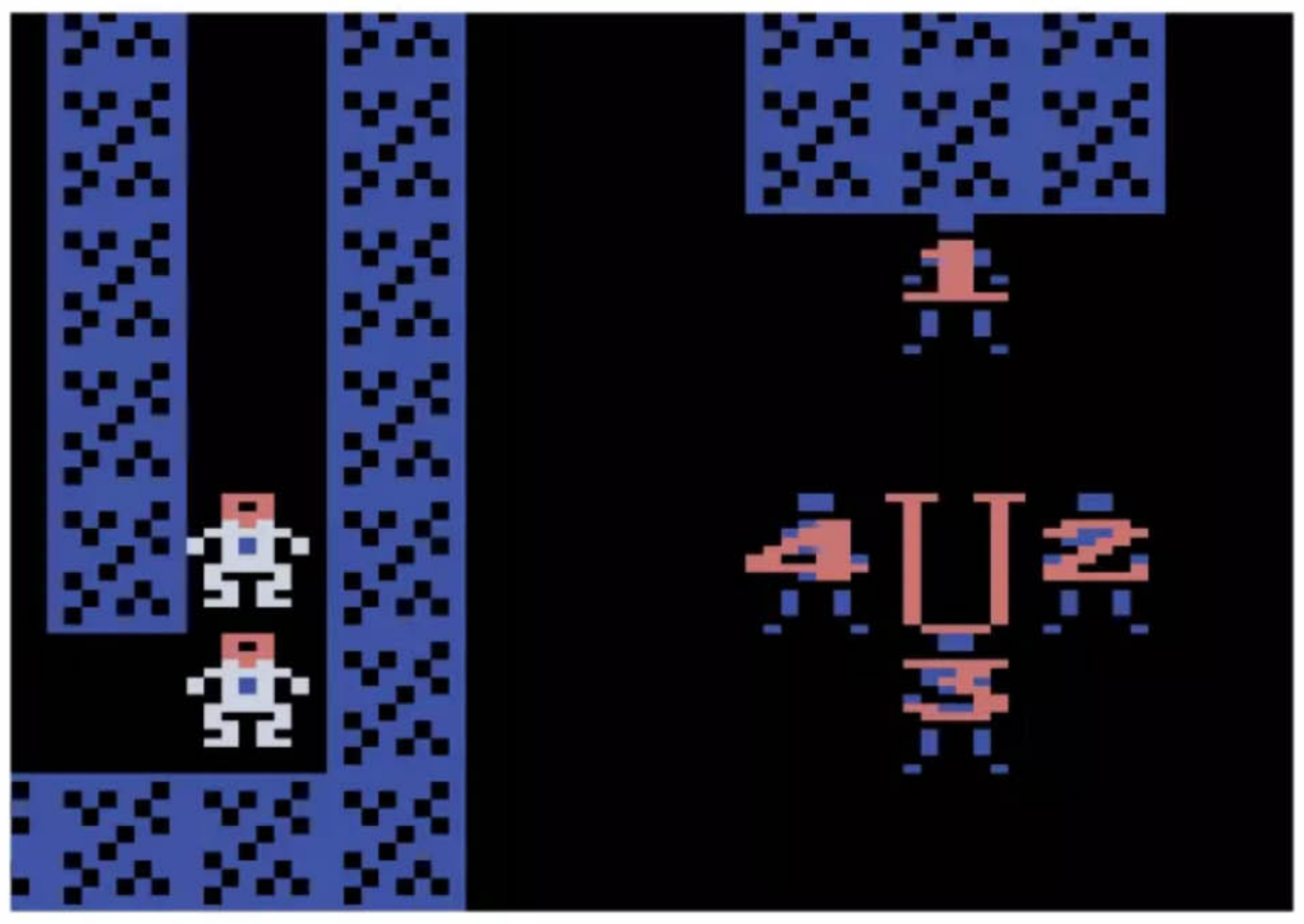
Eastern Front
System: Atari 8-Bit
Year: 1981

My First Alphabet (pictured)
System: Atari 8-Bit
Year: 1981

A
A IS FOR
ARROW



» Level C introduces the first enemy spawners, resembling skulls, ramping up *Dandy's* difficulty level significantly.



» For Jack, enabling four players in *Dandy* was the heart of the game: 'It was all about re-creating the RPG dungeon party experience'.

replace it with a weaker monster, and so on until it was destroyed. It was then simple to use three different graphics for the different levels of monster health."

The spawners arrived from a need to make levels harder, and were inspired by the cellular automata of Conway's *Game Of Life*; but monster swarms, where the player rapidly finds themselves surrounded, came from nothing much at all. "When I created *Dandy*, I was unaware of the likes of *Rogue* and didn't have ideas for monster behaviour beyond 'run right towards the player'," laughs Jack. "If I'd known about *Rogue*, maybe *Dandy's* monsters would have been more interesting!" While never interesting, Jack reveals the monsters sometimes at least became odd during playtesting: "There were bugs where the monsters all ran away from you, or ran at right angles, resulting in orbiting monsters! In retrospect, I should have used these bugs to implement 'scare monster' and 'confuse monster' spells!"

Final pieces of the *Dandy* puzzle centred around ensuring games lasted a decent while. With up to 30 per cent of your heath removed on hitting a monster, food was sprinkled around each level. Unlike the later *Gauntlet*, *Dandy* enables you to store food, saving it for when it's most needed. "Notice that eating food always maximises your health," says Jack. "I wanted the player to decide how much they wanted to gamble on using food – should they wait until their health is low, but then risk dying from a single monster bite?" But even death is not the end in *Dandy*, since shooting resurrection hearts enables players in 'limbo' to return. "The heart was one of the game's last additions. It was added because during playtesting people would start a game over once a party member died. Adding the hearts encouraged the party to keep going, and gave players a nice side-quest."

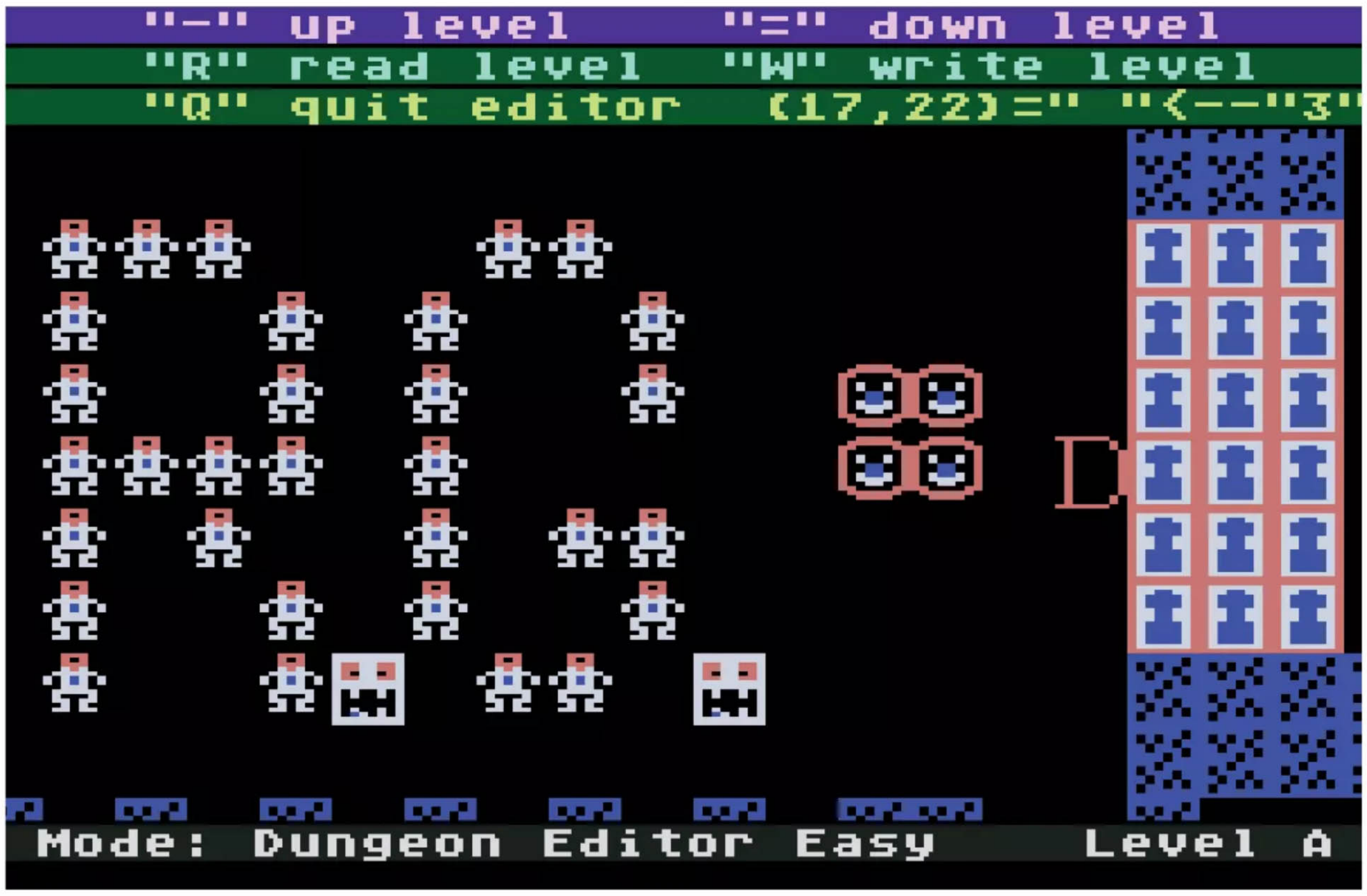
> "THE FIRST THING I DID WITH DANDY WAS CREATE A BIG, EMPTY LEVEL WITH A MAN RUNNING AROUND IT"
>
> JACK PALEVICH

With his game complete, Jack got an 'A' on his thesis, and *Dandy* was subsequently released through the Atari Program Exchange. But the future for Jack and Dandy became turbulent when Atari's arcade division unleashed Gauntlet. Strikingly similar to Dandy (see 'Run The Gauntlet'), Atari's arcade game led to Jack taking legal action to ensure he retained the right to further develop his own creation. "Atari really took advantage of me," he says, ruefully. "To be honest, IP laws weren't very clear in those days, and also MIT owned the rights to my thesis work, and wasn't interested in pursuing claims against Atari."

Jack says his biggest regret, aside from possible lost royalties, was not demanding a 'designed by' credit in *Gauntlet* itself: "I asked for it, but Atari cleverly put me off with the excuse that the ROMs had been burned. Unfortunately, I didn't think of requesting a credit in future revisions of the game." We ask whether Jack feels slighted by the incident, and whether he thinks *Dandy* has been wrongly overlooked as father to entire genres, in favour of *Gauntlet* – especially given that many of *Gauntlet's* gameplay mechanics originated in *Dandy*. "My friends and much of the game design community know about *Dandy*, and so I don't really mind. Also, after *Gauntlet 2*, the *Gauntlet* franchise moved away from *Dandy*. I don't think current versions of *Gauntlet* have much to do with my design."

Gauntlet also pops up when we ask what Jack would change in *Dandy*, if he ever had the chance to go back to it: "That's a good question. Most of the obvious improvements were done in *Gauntlet* – things like adding character classes, more types of monsters, changing the environment sprite set on different levels, adding in synthetically generated levels, character classes, better animation, more kinds of loot, and so

» *Dandy* integrates a level editor, enabling you to rapidly fashion your own dungeons.

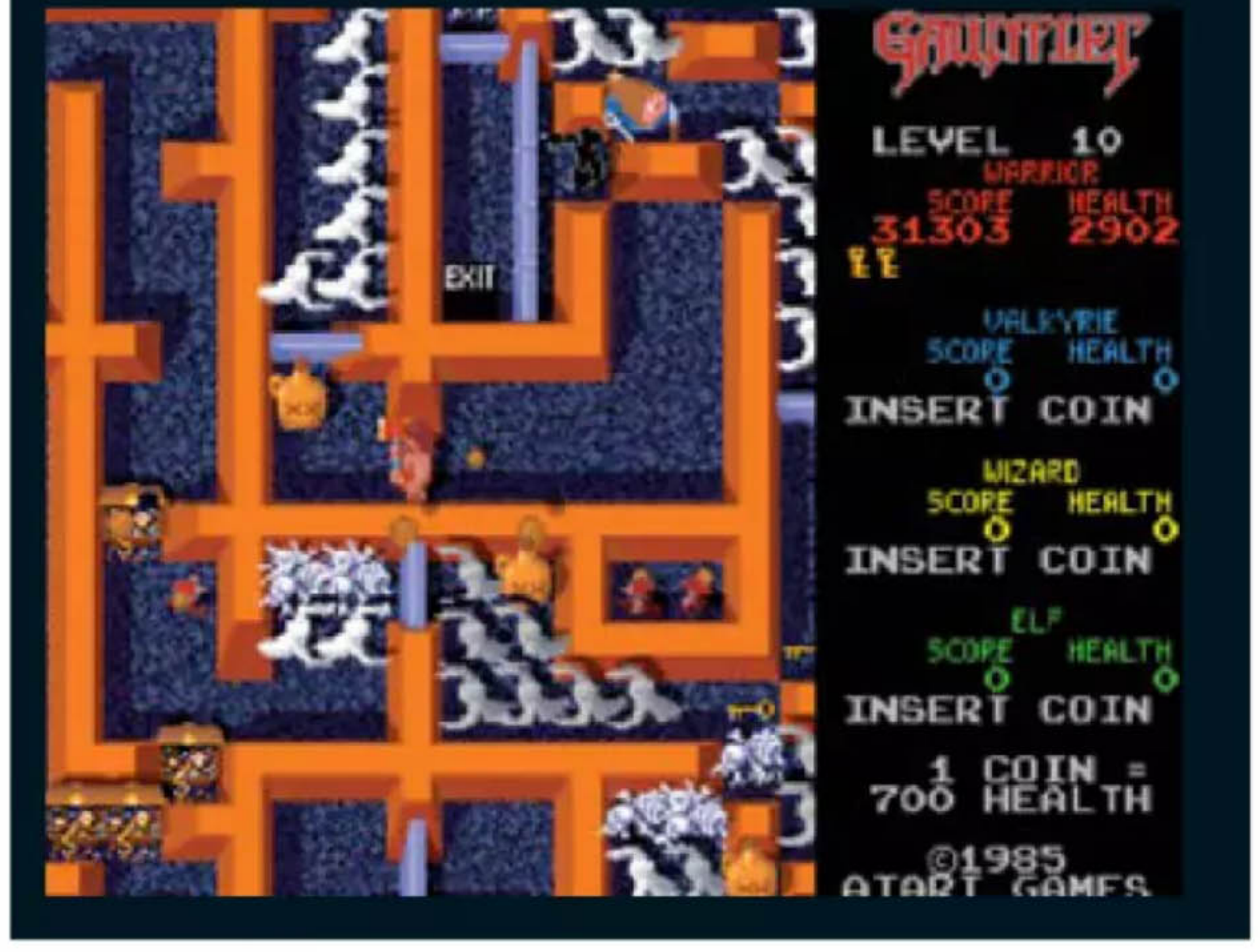


"−" up level "=" down level
"R" read level "W" write level
"Q" quit editor (17,22)=" "<−−"3"
Mode: Dungeon Editor Easy Level A

RUN THE GAUNTLET

Dandy and *Gauntlet* are poles apart aesthetically, but on playing both games, their similarities are apparent. Both offer simultaneous and slightly awkward four-player modes; both enable you to rampage around a scrolling dungeon, killing monsters that spew forth from generators; and both offer a key/locked door model, along with peppering the dungeon with health-boosting food, which has mysteriously managed to stay fresh in putrid conditions.

Most of *Gauntlet's* changes were designed to suck coins: health levels constantly dropping, immediate food consumption, a lack of player resurrection, and more frenetic gameplay. That said, *Gauntlet* also added important ideas to the mix, including distinct monster types, and melee attacks for hand-to-hand combat. It's likely, though, that *Gauntlet's* sheer success, rather than amended gameplay mechanics, are what led to it becoming a 'template' for an entire genre, at the expense of the obscure *Dandy*."



on… But I think if I had to do *Dandy* again with exactly the same time and design budget, I'd put in differently shaped levels, and a few more types of monsters. And it might be worth creating a shop – the money you collect is currently useless!"

Expanding out

Today, Jack remains immersed in the world of technology, and worked for seven years at Microsoft on graphics libraries and tools for the Xbox and Xbox 360. More recently, he wrote the 'Street View' Google Maps 3D viewer for the Android smartphone. With a family to support, Jack says he has little time for writing games as a hobby, although it's clear *Dandy* never entirely left him. "I like learning new programming languages, and when I learn a new language or library, I often try to implement *Dandy* in it, to get a feel for whether the language is a good fit for videogame programming.

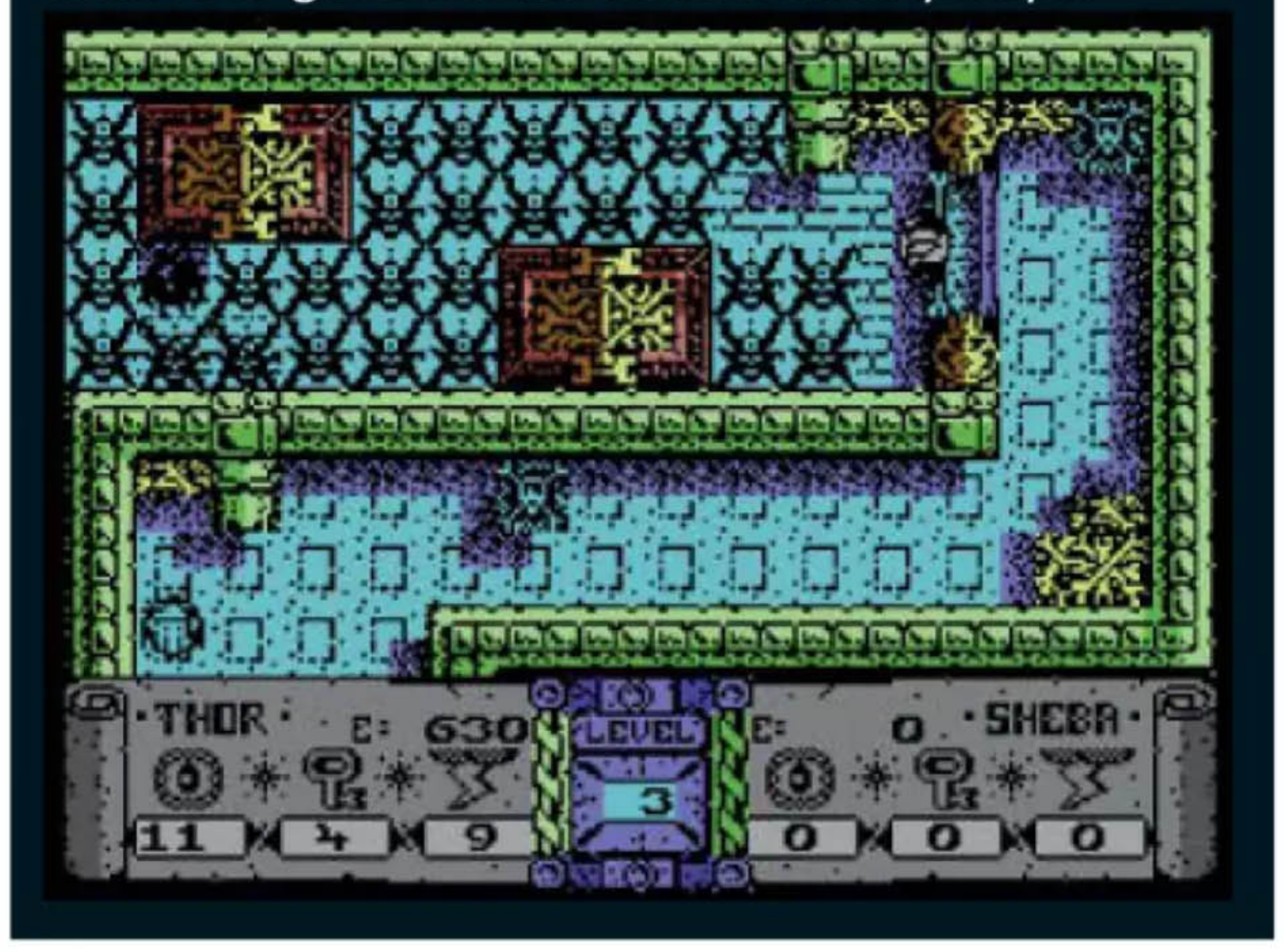
Unfortunately, no version of *Dandy* has yet appeared on a modern console, and Jack's unsure whether that will ever change: "One problem I've run into in developing *Dandy* for modern consoles is that most of the obvious incremental improvements, such as improving the way characters move, or adding more kinds of monsters, actually make *Dandy* more like *Gauntlet* – and that's just not a direction I want to go in. I don't want to just copy that game, and so I feel that I'd have to work for quite a while to move beyond the *Gauntlet* design space and strike out into new territory."

TOGETHER IN ELECTRIC DREAMS

Dandy resurfaced in 1986 on major home computer formats. Bearing little direct similarity to Jack's game, the update instead ripped off *Gauntlet*, resulting in a legal spat between publisher Electric Dreams and Atari, causing myriad irony machines to explode.

Although the Z80 versions are fine, the C64 port is iffy, and programmer Nick 'Orlando' Pelling reveals why: "*Dandy* was written by a bunch calling themselves 'The Ram Jam Corporation', who promised Electric Dreams a C64 conversion by Christmas. Time passed, nothing turned up. Electric Dreams pulled the plug and asked me to give the C64 version a go."

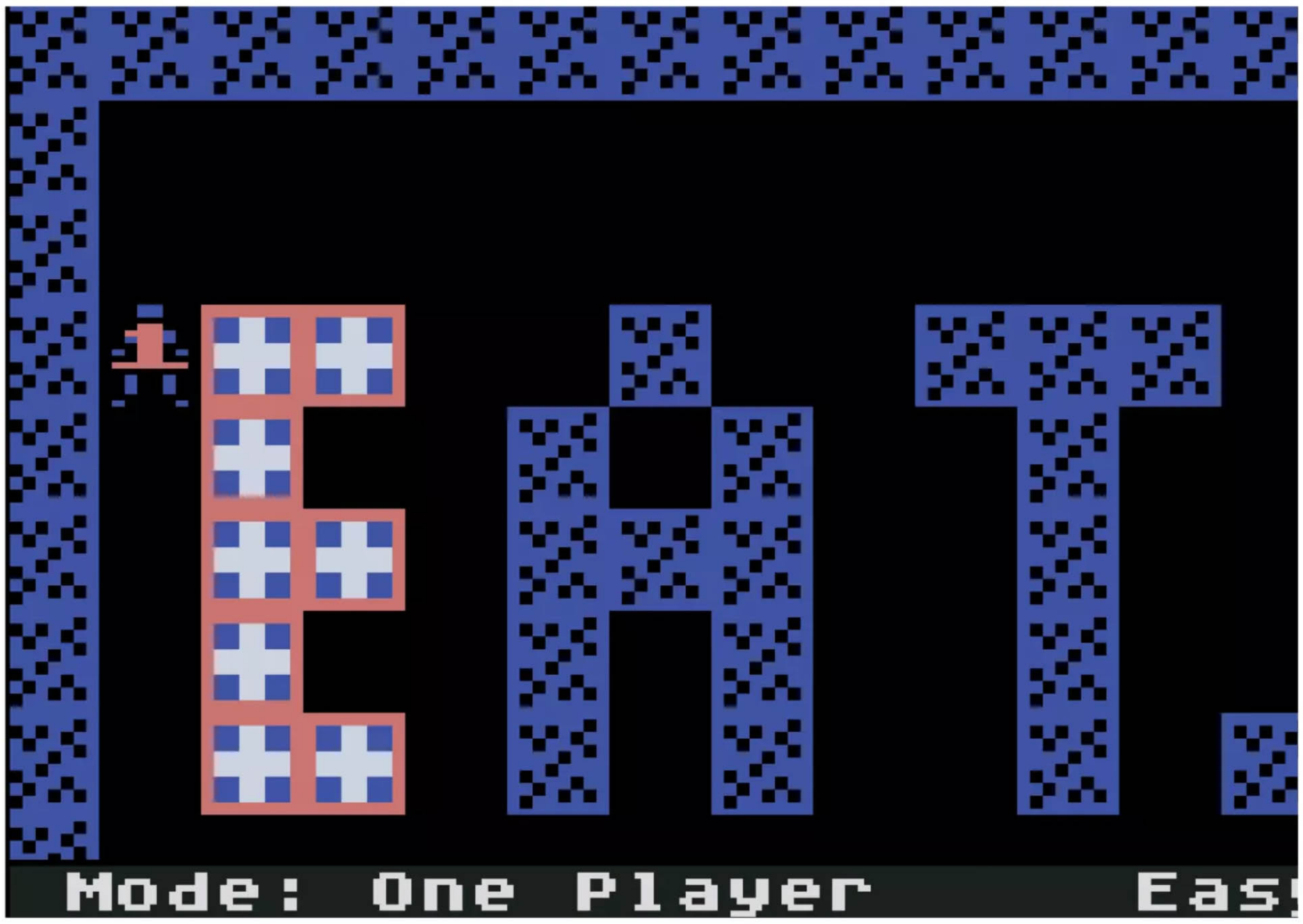
Although he'd never programmed the C64, Nick took on the challenge, considering *Dandy* a simple game: "I knew 6502 assembler inside out, had access to a dev-kit, and worked for six days without sleep, took a day off, and worked for another six days to get everything working. Despite the mad effort, Electric Dreams messed up the packaging and were unable to get it out for Christmas anyway…"



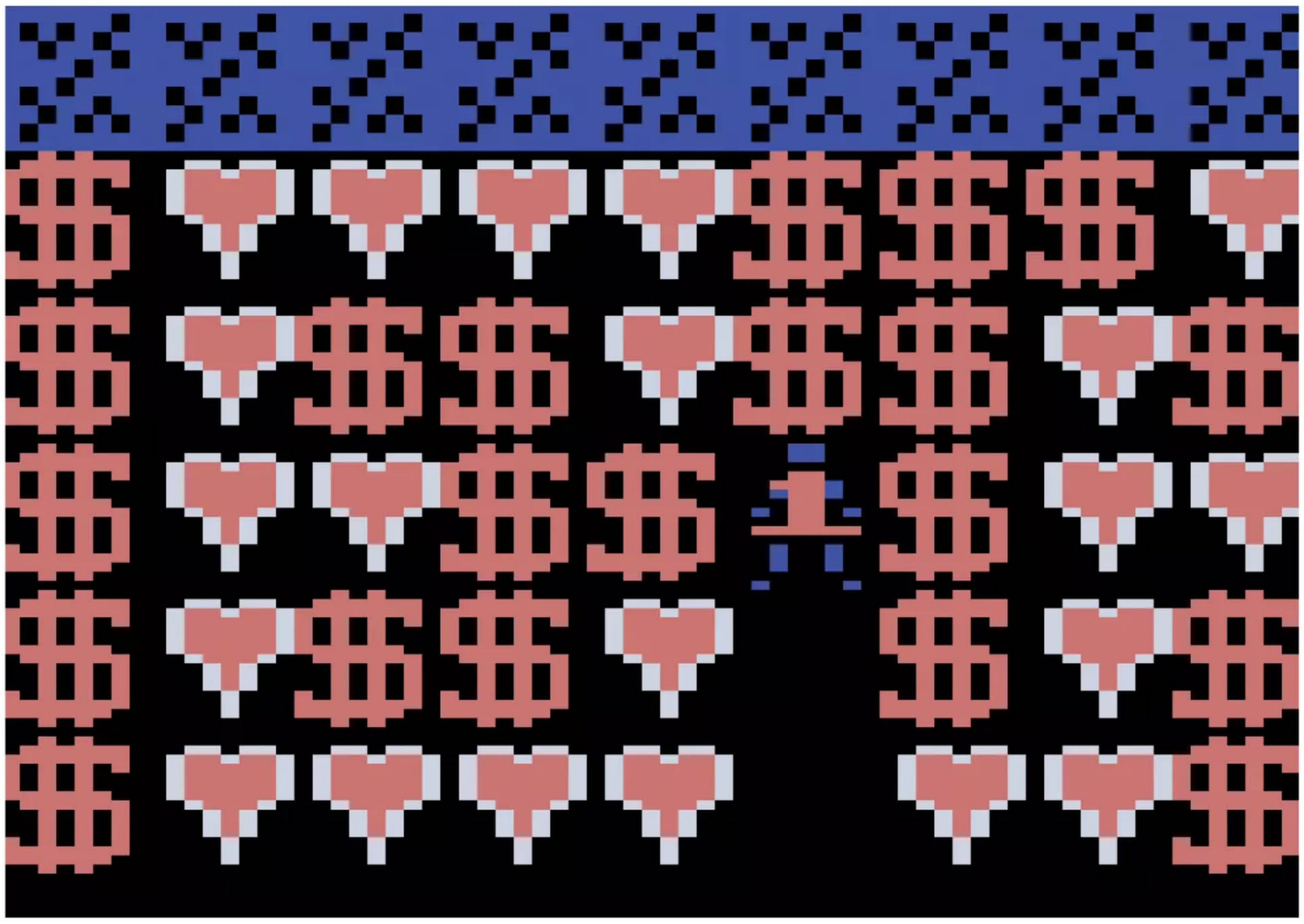
"I LIKE LEARNING NEW PROGRAMMING LANGUAGES, AND WHEN I LEARN A NEW LANGUAGE OR LIBRARY, I OFTEN TRY TO IMPLEMENT DANDY IN IT, I GUESS MOST PEOPLE WOULD USE TETRIS OR SNAKE INSTEAD!"

JACK PALEVICH

» Overt instructions 'hidden' in the maze design of level A, providing a tutorial on *Dandy* components.



» The final dungeon level is 'heaven': full of cash, but endlessly repeating.



THE MAKING OF PAPERBOY

WHEN PAPERBOY RODE IN TO ARCADES IN 1984 HE BROUGHT WITH HIM COLOURFUL CARTOON VISUALS, A UNIQUE CONTROL METHOD AND FUN GAMEPLAY. DARRAN JONES SPEAKS TO CREATORS JOHN SALWITZ AND DAVE RALSTON AND FINDS OUT HOW THEY MANAGED TO CREATE THE ULTIMATE BUSMAN'S HOLIDAY

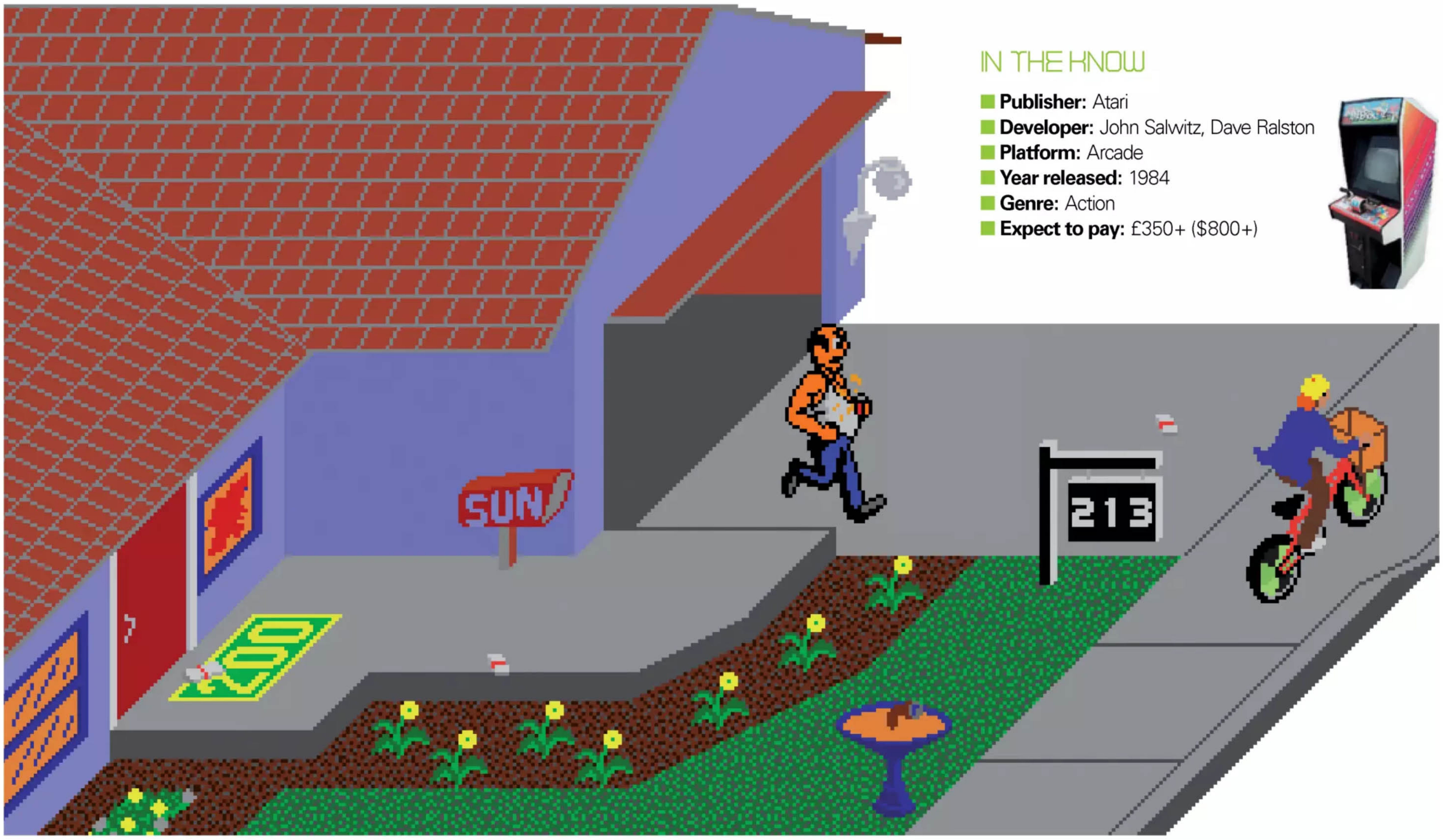
It's amazing what effect alcohol can have on you once it starts swilling around your innards. Some people get an increased sense of confidence, feeling they can do anything, while others suffer from a lack of judgement that sees them making decisions they'd otherwise normally never consider. In the case of John Salwitz (who is currently senior development director at Electronic Arts) and Dave Ralston (a designer for Locomotive Games) the aforementioned alcohol consumption allowed them to overcome a stumbling block on one of the most popular games of 1984: Atari's *Paperboy*.

Beer fridays

"Back in those days Atari was famous for having Beer Fridays," laughs Dave Ralston who, along with Will Noble, was Paperboy's designer and lead artist on Atari's new project. "We had a tapper there on the premises and one particular Friday there had been a party; when John and I came in the next day there was still plenty of beer in the keg. Anyway, we dragged it outside onto this atrium and did some brainstorming."

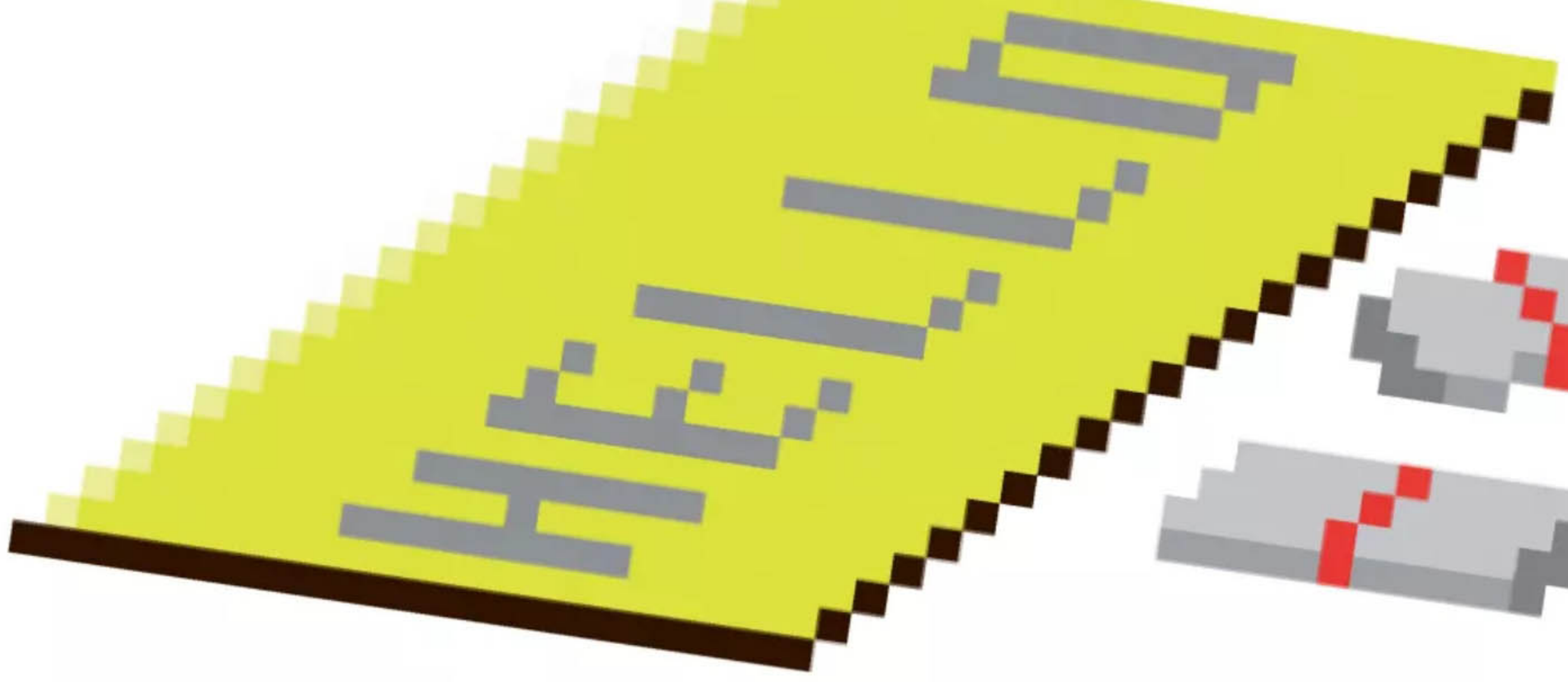
"I think that was the magic moment when everything clicked," agrees Salwitz, who was *Paperboy's* lead programmer. "Dave had these wonderful storyboards that showed a projection of the entire street and we literally populated it that very day. We probably knocked out around 60-70 percent of where all the characters in the game would finally end up."

"We were probably stupid for never doing that sooner," laughs Dave about the entire incident. The laughter continues throughout our interesting 40-minute interview and it soon becomes obvious that the two friends both have a huge amount of respect for each other, as well as the videogame that they brought kicking and screaming into the arcades after a 24-month gestation period. But where did the concept come from?



IN THE KNOW

- **Publisher:** Atari
- **Developer:** John Salwitz, Dave Ralston
- **Platform:** Arcade
- **Year released:** 1984
- **Genre:** Action
- **Expect to pay:** £350+ ($800+)



"There had been a game that had just come out in the arcades called *Zaxxon* which had this really cool isometric perspective and it felt really fresh," recalls Ralston. "We saw it and realised that the isometric perspective would offer a very good view of the action in our game and that it would work far better than a side scroller or a top-down. As for the game itself it grew out of the fact that there were five boys in my family and I was the last one and we were all paperboys, so I just took it from there. I think I was a really good paperboy. In fact, I seem to remember that I was a great paperboy," he continues. "The one thing I can remember about those days is driving around as a family and seeing newspapers on roofs and in bushes and stuff. Not everyone was a good paperboy in real life and I think that was at the heart of the idea. I just thought it would be an interesting twist for a game."

And interesting *Paperboy* most certainly was. Most games of the time saw you shooting down wave upon wave of vicious aliens, negotiating mazes or jumping across simplistic platforms; they certainly didn't allow you to participate in your part-time job.

> "WE DID HAVE A JOYSTICK ORIGINALLY, BUT WHEN WE FOCUSED THE GAME WITH [IT] IN PLACE, IT JUST DIDN'T GO DOWN WELL AT ALL… WE WANTED TO TRY SOMETHING A LITTLE MORE UNIQUE"
>
> DAVE RALSTON

Set over seven days, your task was to deliver papers to subscribers, while causing as much damage as possible to the homes of non-subscribers. Papers could be replenished en route and once you'd completed your daily round you could take part in a short but exhilarating obstacle course. It may have sounded simplistic, but with each street being littered with obstacles it took real skill to negotiate them, especially if you tackled 'Hard Way', *Paperboy's* final street.

Paperboy may have been exciting and fresh back in the early Eighties, but those beautiful visuals, state-of-the-art controller and slick gameplay did come at a price: the aforementioned lengthy 24-month time period…

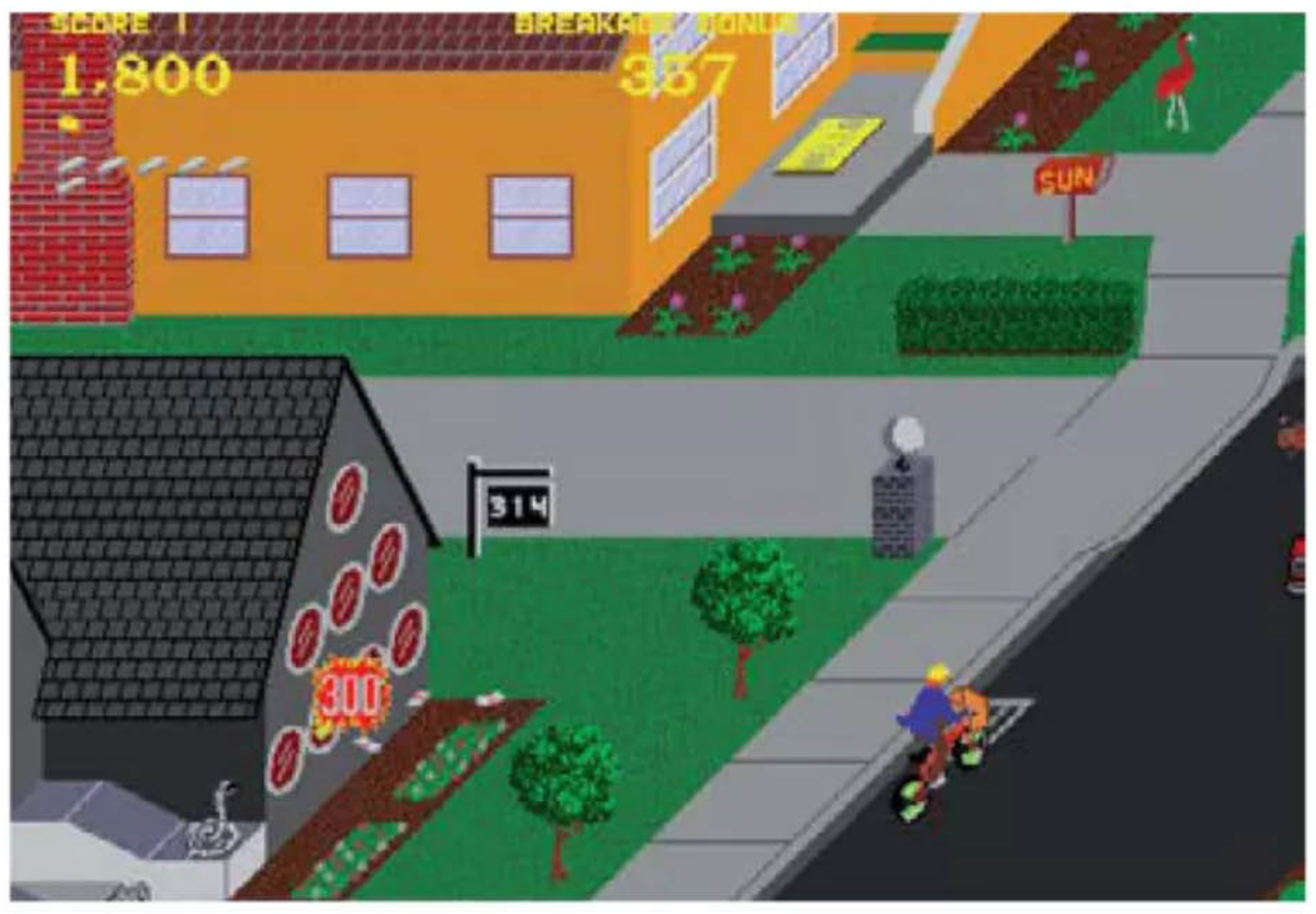
"It took two years mainly due to some of the changes we had to make along the way," explains Ralston. "It was pretty much everything really, from changes in the schematic style, to alterations to the actual controller. It certainly took us a while to figure all those things out."

New hardware, new freedom

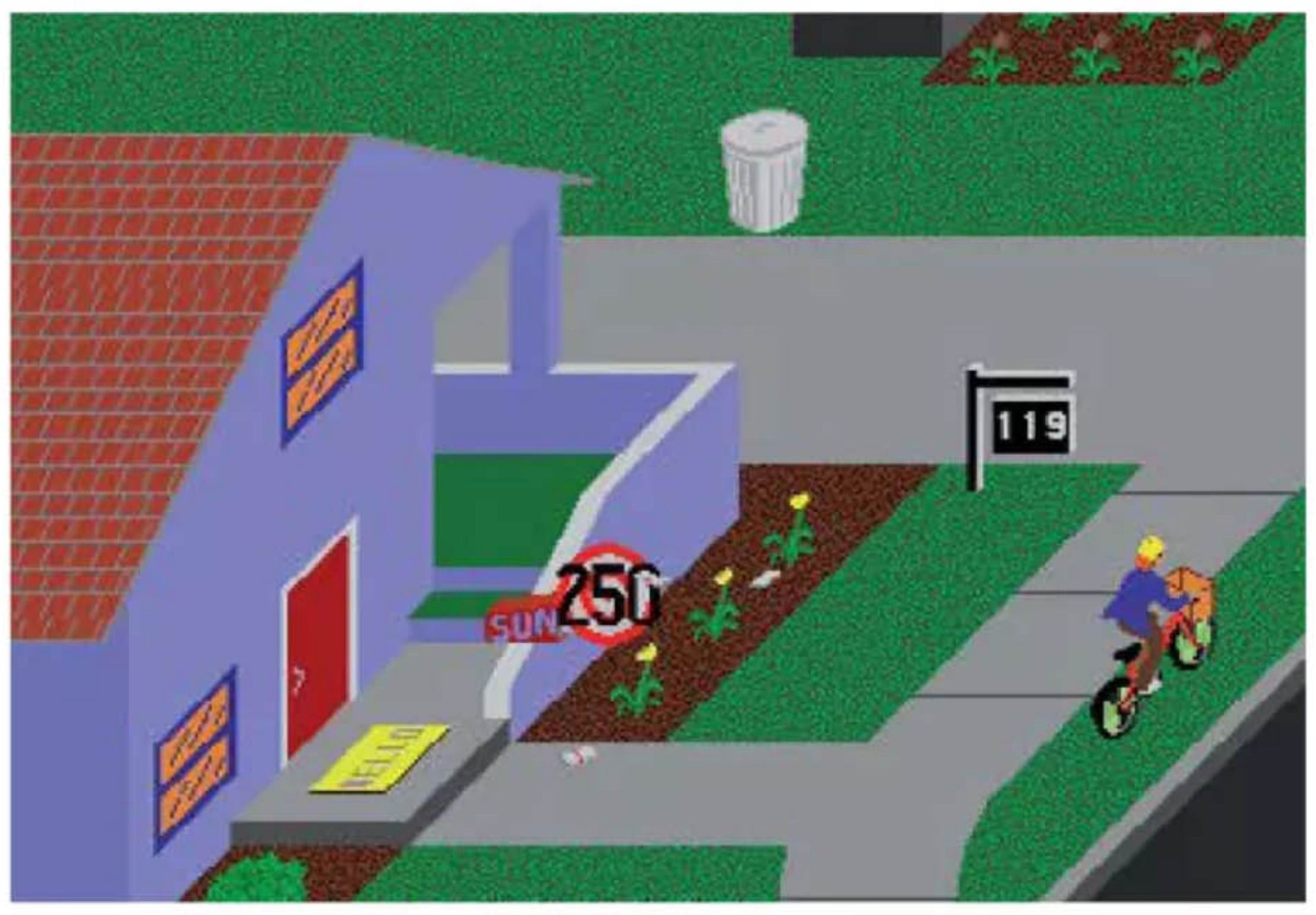
Fortunately, it wasn't all bad news, as one of the main differences – and for the two men, the most satisfying – was the change in hardware, which gave Salwitz, in particular, far more freedom than when the project had first started. "Originally *Paperboy* started off life as a low-resolution game (about 320 x 240 pixels) before Doug Snyder created the new medium-resolution System II board for it," begins Salwitz. Which explains why it looks very different to earlier games of the same period. "The hardware changed substantially and schematically, it basically went through a radical shift."

As well as having to deal with the change in hardware, the cost of the machines meant that the game had to be created as efficiently as possible, which in turn added to *Paperboy's* development time. "That game is literally made up of little 8x8 blocks," continues Salwitz. "The backgrounds were painstakingly created one by one; it's a lot like building with bricks, except the bricks have already been painted. The animations and characters were built using some pretty primitive tools, and so due to the cost of putting all that together, we couldn't really do a lot of extra things and we were very deliberate when putting it all together."

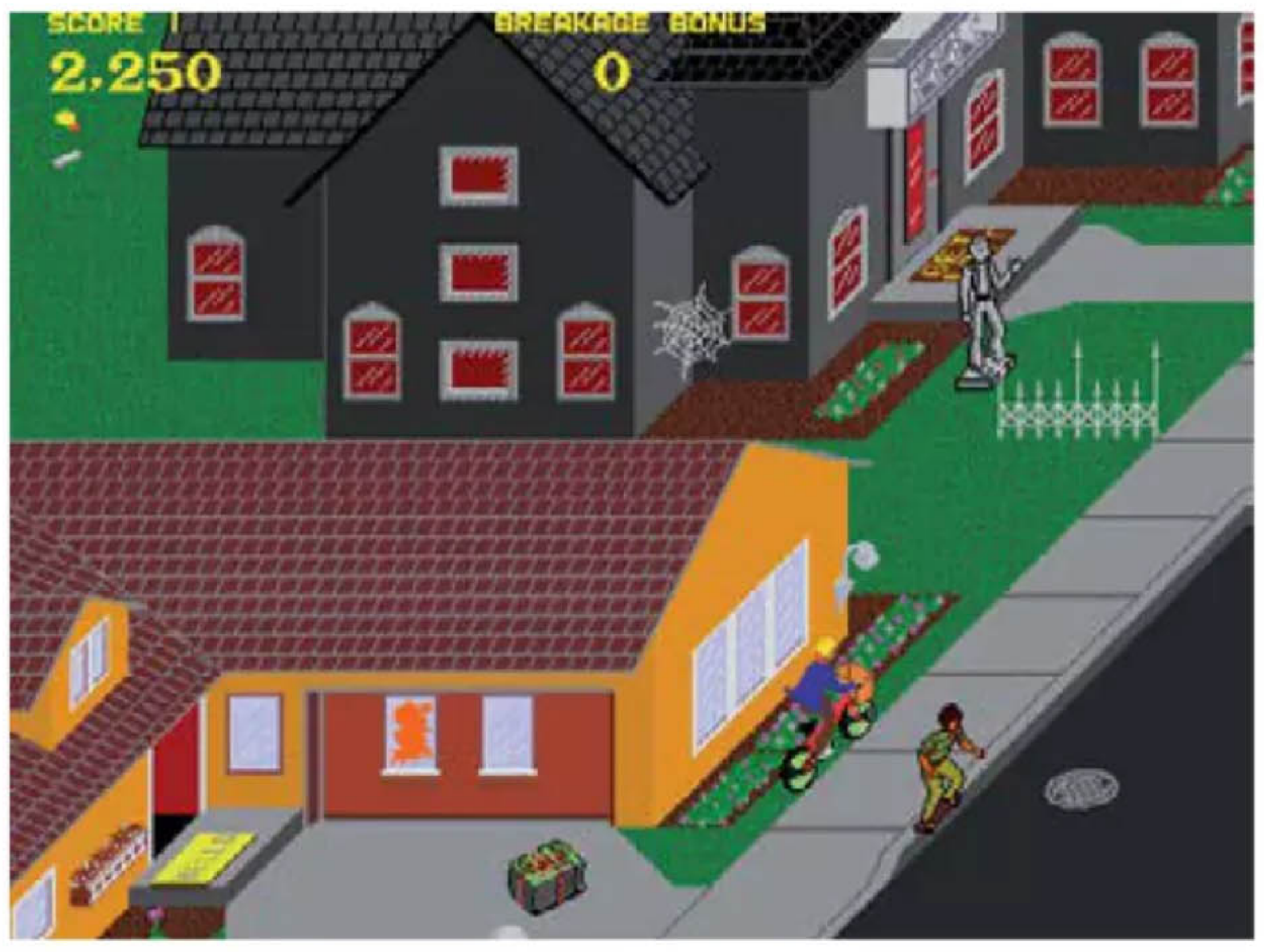
Paperboy's conception may have been long and arduous, but one thing that did make a difference was the sheer amount of playtesting that the game went through. Over the course of its two-year development time, *Paperboy* went through numerous focus groups and playtests before it was eventually released to a more than satisfied public.



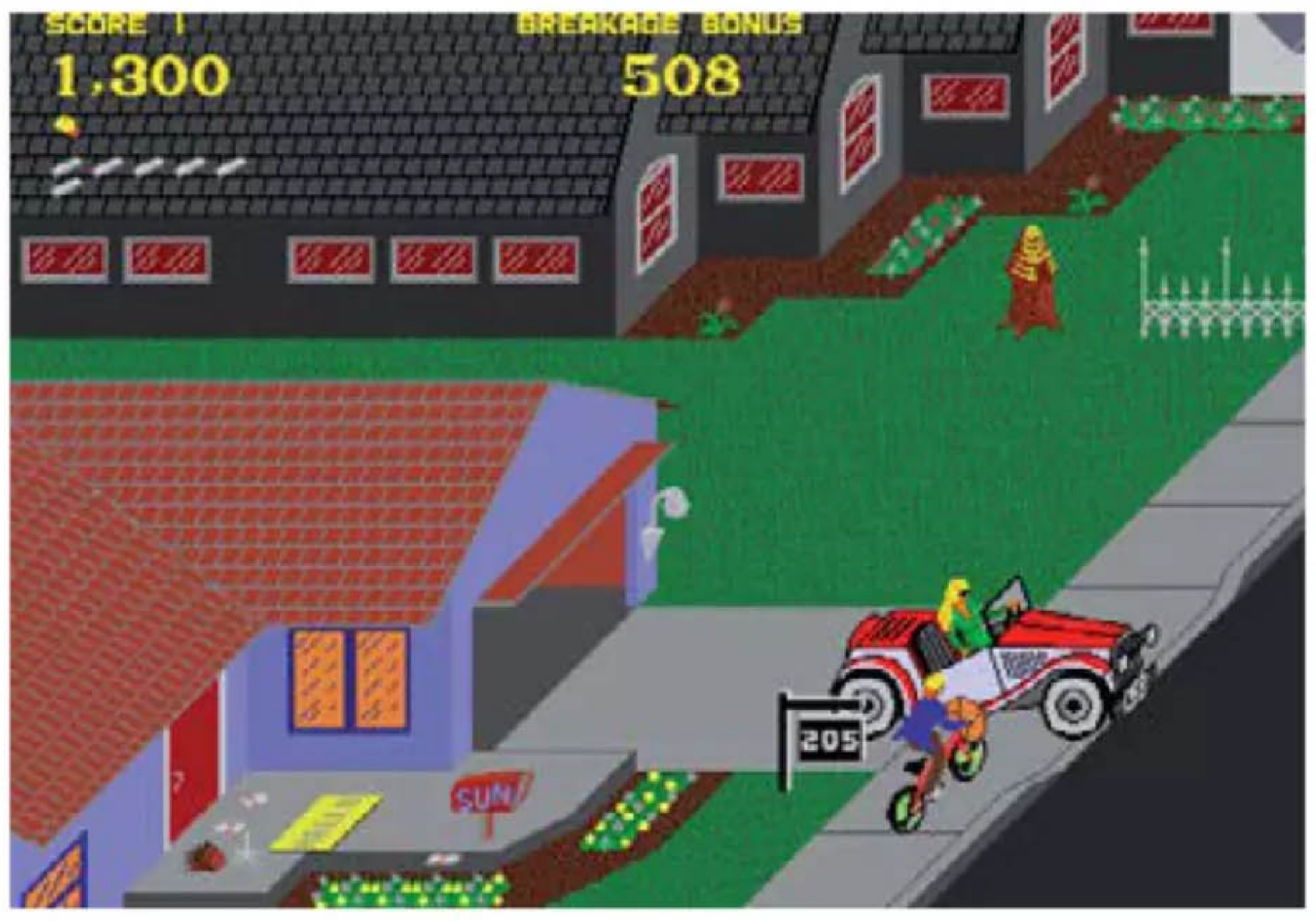
» While you scored points for breaking the windows of non-subscribers, care had to be taken not to hit any others.



» It's important to remember to get as many points as possible in *Paperboy*. Here we are getting a bullseye!



» As the week progressed, the obstacles got harder and harder to negotiate.

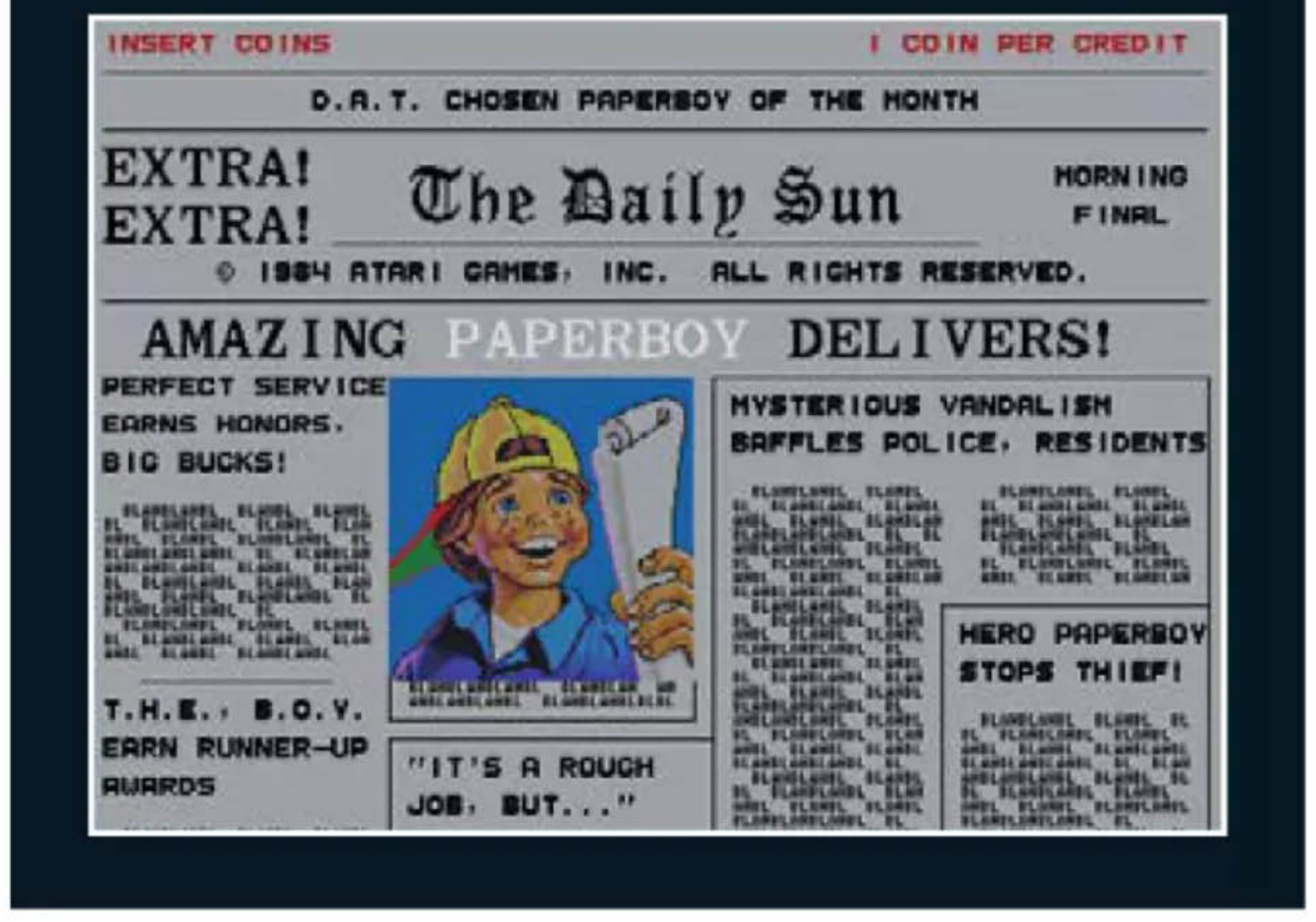


JUST A BIT OF FUN

Don Traeger may well have been instrumental to Paperboy's eventual success, but that didn't mean that Ralston and the rest of the team liked to make things easy for him (all in the name of a good joke, you understand). "I remember that we made this bogus earnings report for him," recalls Ralston, which instantly jogs Salwitz's memory and sends him into guffaws of merriment.

"It was our first field test when you'd put the game out in an arcade, and I think Don must have gone on vacation right after it happened. Anyway, he went away for a whole week and while he was absent we got somebody in marketing (probably Jackie Sherman) to type up an earnings report so that it looked like all the others, except of course, the earnings were absolutely horrible.

It just showed that the game had absolutely tanked and then I just wrote across the front of it 'Project Cancelled'. We just left it on Don's desk and waited for him to come back from vacation. It was far from the truth as it actually tested very well."



INSERT COINS
1 COIN PER CREDIT
D.A.T. CHOSEN PAPERBOY OF THE MONTH
EXTRA!
EXTRA!
The Daily Sun
MORNING
FINAL
© 1984 ATARI GAMES, INC. ALL RIGHTS RESERVED.
AMAZING PAPERBOY DELIVERS!
PERFECT SERVICE EARNS HONORS, BIG BUCKS!
T.H.E., B.O.Y. EARN RUNNER-UP AWARDS
"IT'S A ROUGH JOB, BUT..."
MYSTERIOUS VANDALISM BAFFLES POLICE, RESIDENTS
HERO PAPERBOY STOPS THIEF!

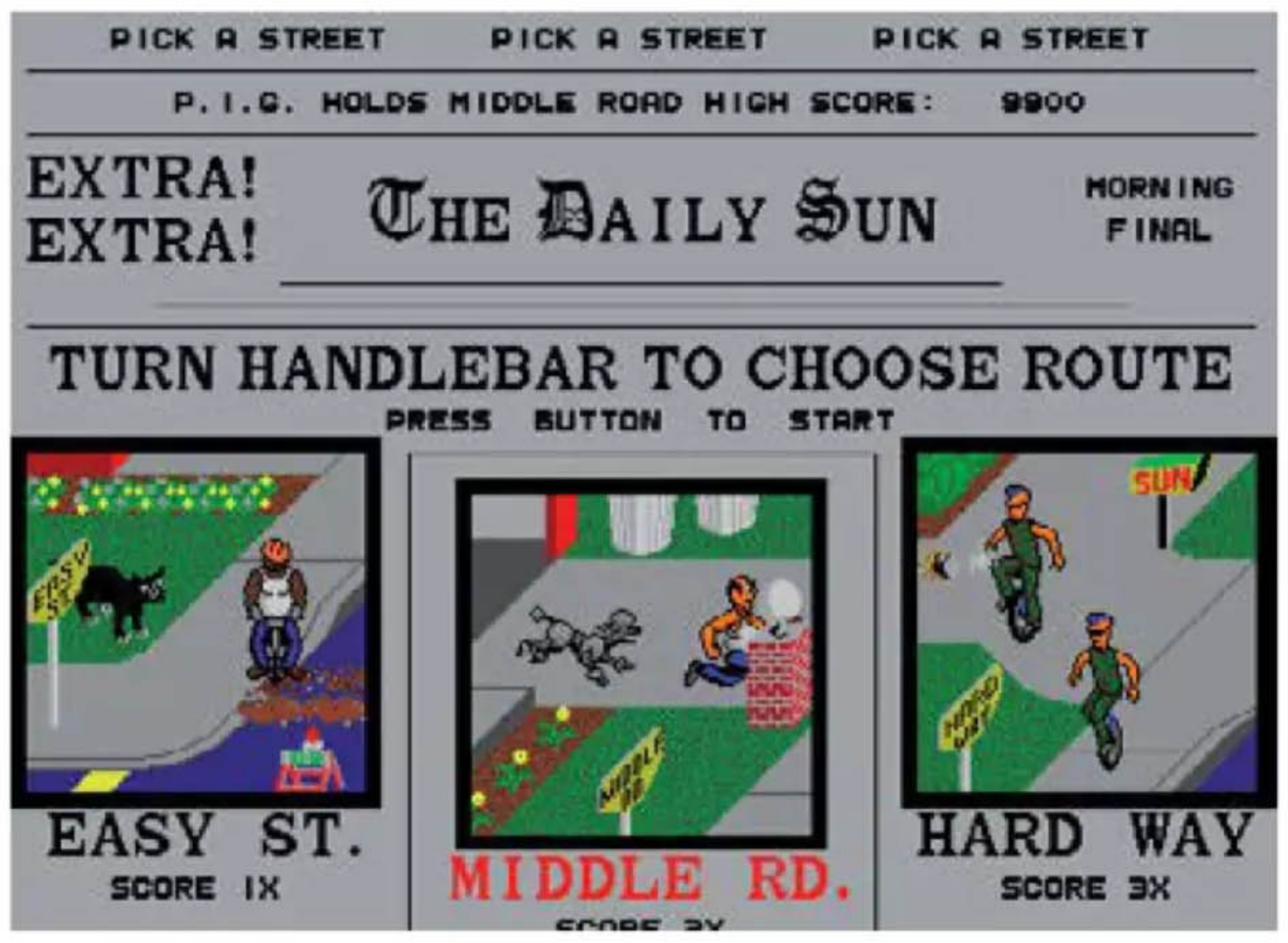
When Atari had a new game in development it would simply take a prototype down to an arcade, leave it in there for the day and judge its success on the amount of quarters it took. It was a concept that wasn't lost on Salwitz and it allowed for another of *Paperboy's* players to enter the fray: marketing rep Don Traeger.

"Atari's playtesting process was the most beautiful test there was; it really doesn't get any better," gushes Salwitz. "We did a lot of focus group testing as well and that was where Don Traeger really started to get involved. In fact, Don is a very big part of the reason why *Paperboy* ever got finished, because he was not only the original marketing partner on it, but he also came in at a point in the game where we were really struggling.

"We'd just had this really horrific focus group, and it was just heartbreaking and frustrating for the team because we really cared about the product we had created. So anyway, he came in, ran that focus group, came out and everyone – I mean everyone – was saying horrible things about the game. Afterwards he comes out with this really big smile and says, 'That was great, we learned a lot from that.' After that he proceeded to help us really understand what was going on."

Traeger played another important role in *Paperboy*: that of the actual Paperboy himself. Asking about the origins of *Paperboy's* speech brought many a laugh from Ralston until he admitted that the main character's voice belonged to none other than Traeger, who's now CEO of Locomotive Games. But how does being the voice of a videogame character stack up to being a CEO? "To this day he takes a lot of pride in the fact that he was the voice of the Paperboy and people still remember him for that," laughs Ralston. "It was no actor we used; it was just the marketing guy."

While Traeger started taking control of *Paperboy's* focus groups, Ralston and Salwitz quickly found out that one of the easiest ways of getting feedback for the game was to simply carry on working on it. "One of the other key ways that you did testing at Atari was that if anyone was going to walk over to your lab or cubicle you would just let them play the game, which is amazingly dissimilar to the way things happen these days," says Salwitz.



PICK A STREET PICK A STREET PICK A STREET

P.I.G. HOLDS MIDDLE ROAD HIGH SCORE: 9900

EXTRA!
EXTRA!

THE DAILY SUN

MORNING
FINAL

TURN HANDLEBAR TO CHOOSE ROUTE

PRESS BUTTON TO START

EASY ST.
SCORE 1X

MIDDLE RD.

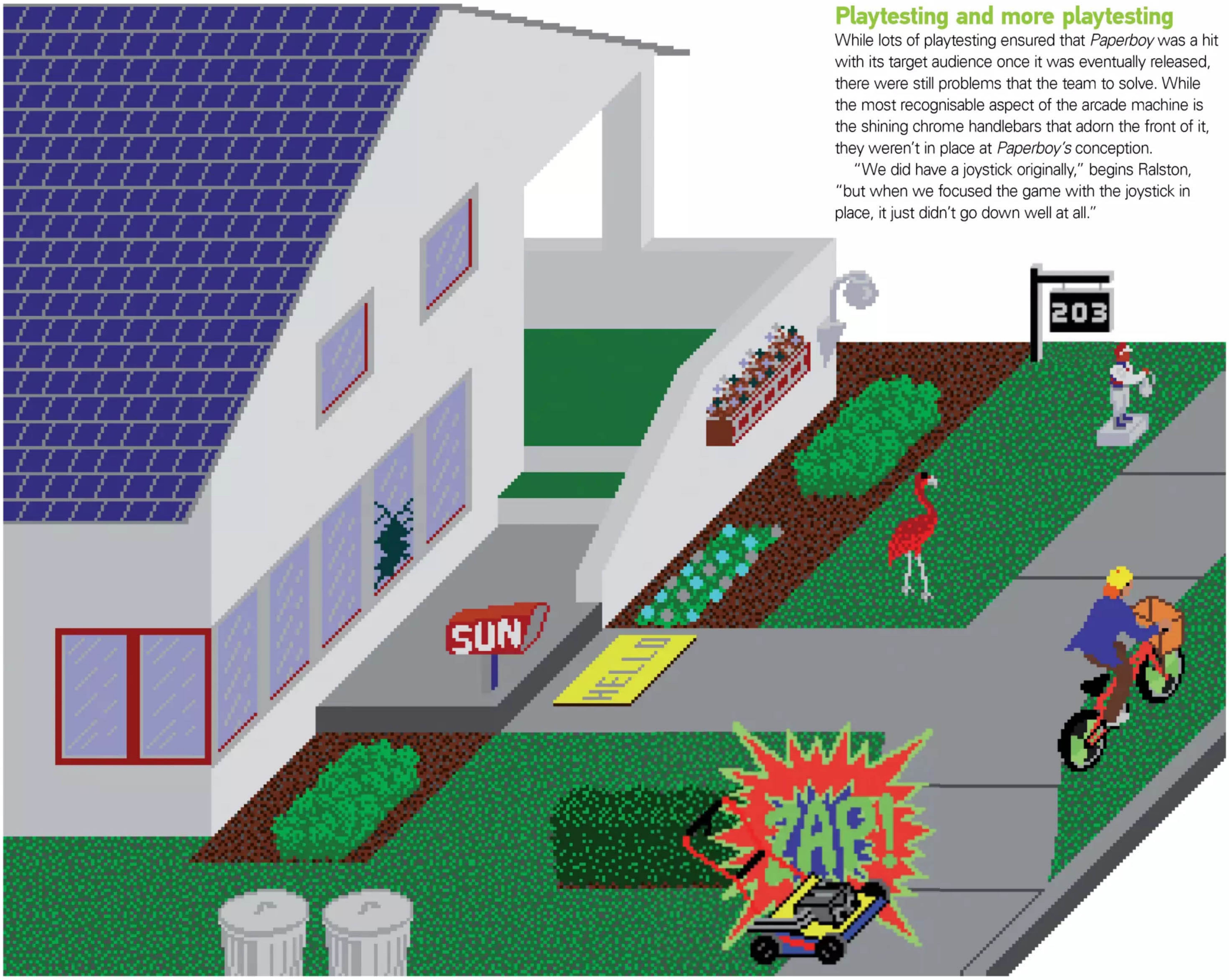
HARD WAY
SCORE 3X

"There was just so much casual play from other people in the building that I think it was one of the best ways that you could ever understand what really did and didn't work. You could tell your game was good because people were coming over at lunch and were literally interrupting your work just so they could have one more go. We'd just sit there and watch them play."

Playtesting and more playtesting

While lots of playtesting ensured that *Paperboy* was a hit with its target audience once it was eventually released, there were still problems that the team to solve. While the most recognisable aspect of the arcade machine is the shining chrome handlebars that adorn the front of it, they weren't in place at *Paperboy's* conception.

"We did have a joystick originally," begins Ralston, "but when we focused the game with the joystick in place, it just didn't go down well at all."



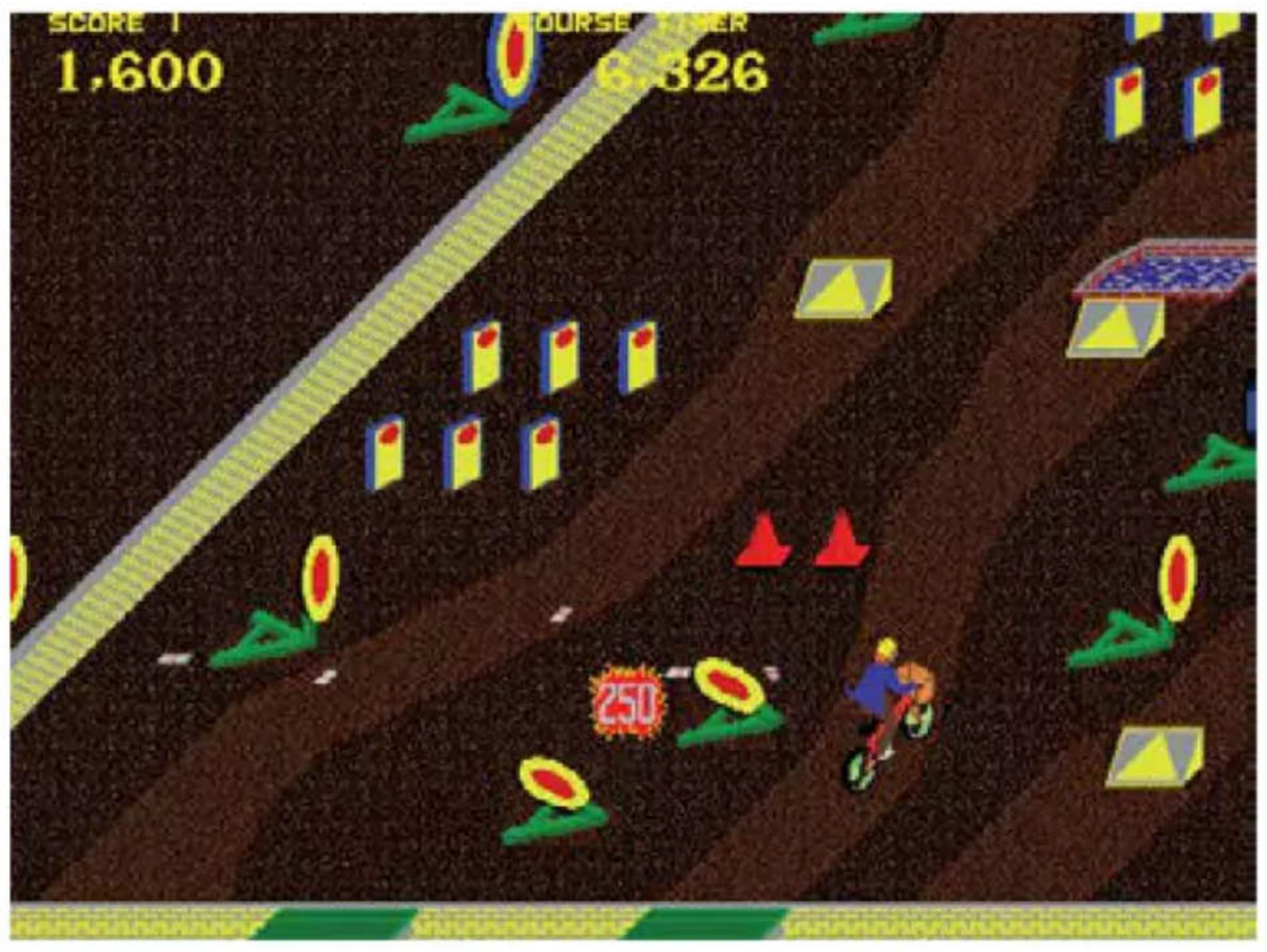
CONVERSION CAPERS

With the arcade game proving to be so popular, *Paperboy* quickly started appearing on various home consoles and computers. Indeed, it was recently released on the 360's Xbox Live Arcade, but neither Ralston nor Salwitz have had a chance to play it yet.

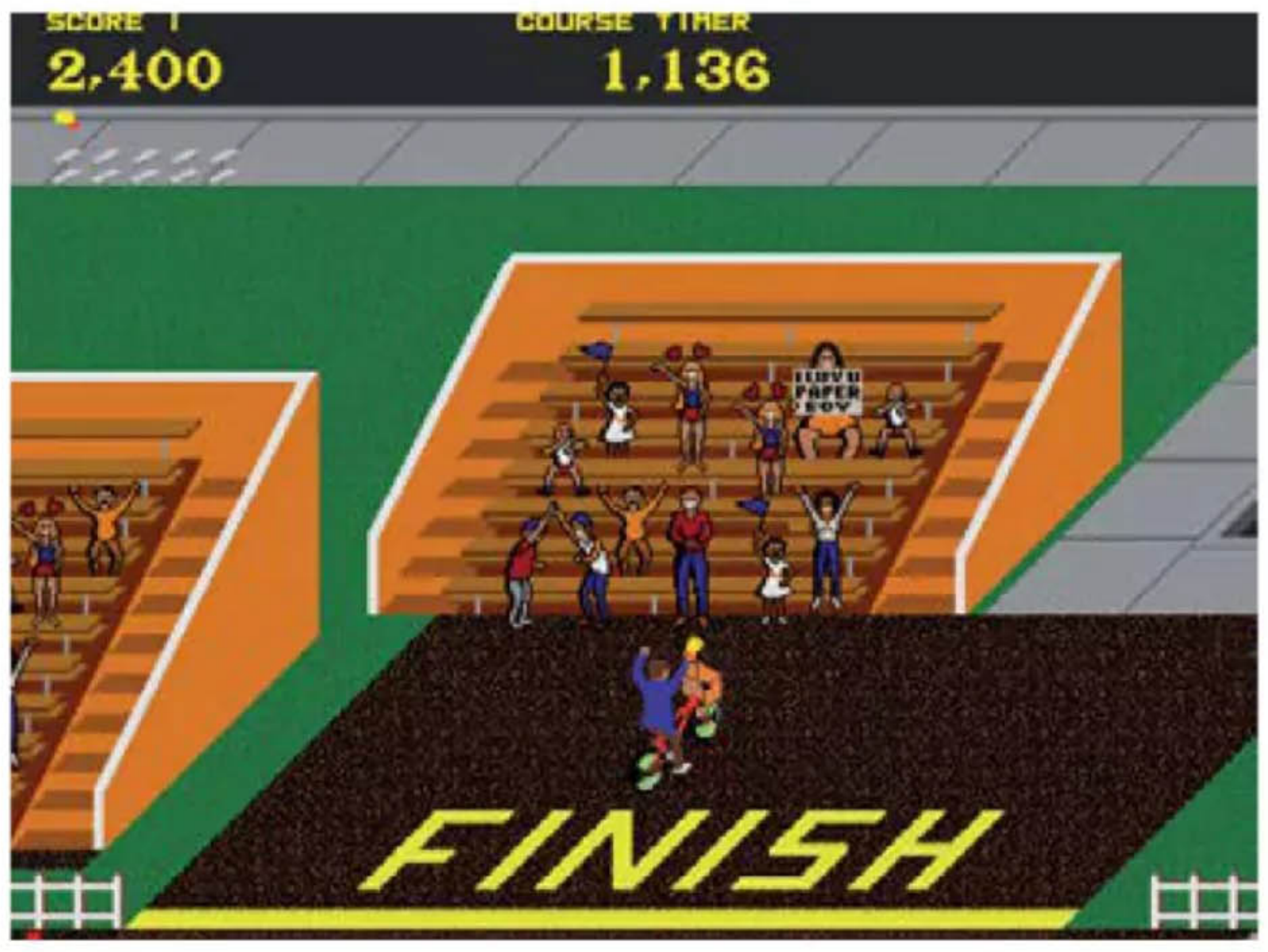
"I remember the NES version, for me at least, being a huge surprise," recalls Salwitz. "Right after we did *Paperboy*, we dove into *720°* and right after that it was *Cyberball* and right after that it was *Rampart* – we were just so focused on our own work. We never thought about how we could continue marketing a product, we were all about what can we do next, and it always had to be completely different. If I'm truthful we were coin-op purists and for us, coin-op hardware was so much more powerful than anything that was in the home. So I think the real truth is that we probably looked down our noses at anything that wasn't coin-op at the time, purely because of the difference in hardware and what you could do with it. At the time I don't think we understood the potential of home sales – this was Atari after all – and we had just got through the VCS nightmares and so we didn't really have an appreciation of what Nintendo was doing at the time at all until it really took off."

"I think the joystick was confusing at the time because of the perspective that we were using," he continues. "We had always had something at the back of our minds that we wanted to try something a little more unique and the joystick feedback that we received kind of confirmed that." Leaving the joystick idea behind, Salwitz and Ralston left the unique control mechanism – "it was basically a Star Wars flight controller that was just modified for Paperboy" – in the more than capable hands of Milt Loper.

"Atari at that time had a very active mechanical shop," begins Salwitz, when we ask him about the creation of those iconic handlebars. "It was amazing; those guys could pretty much build anything and it was part of Dave's philosophy that we should always try and innovate in all things. In the end we decided that the controls were just another area that we had a chance to innovate in. You also have to keep in mind that back in the early Eighties, we didn't know for sure that even the joystick would become a foundation for control, or the trackball for that matter. We just saw them as kind of stepping stones to other controls. In the end it turned out that the handlebars themselves made for the most natural way of playing *Paperboy*. We never tried to create them as a way of simply increasing sales; it has always been about what was best for the actual game."



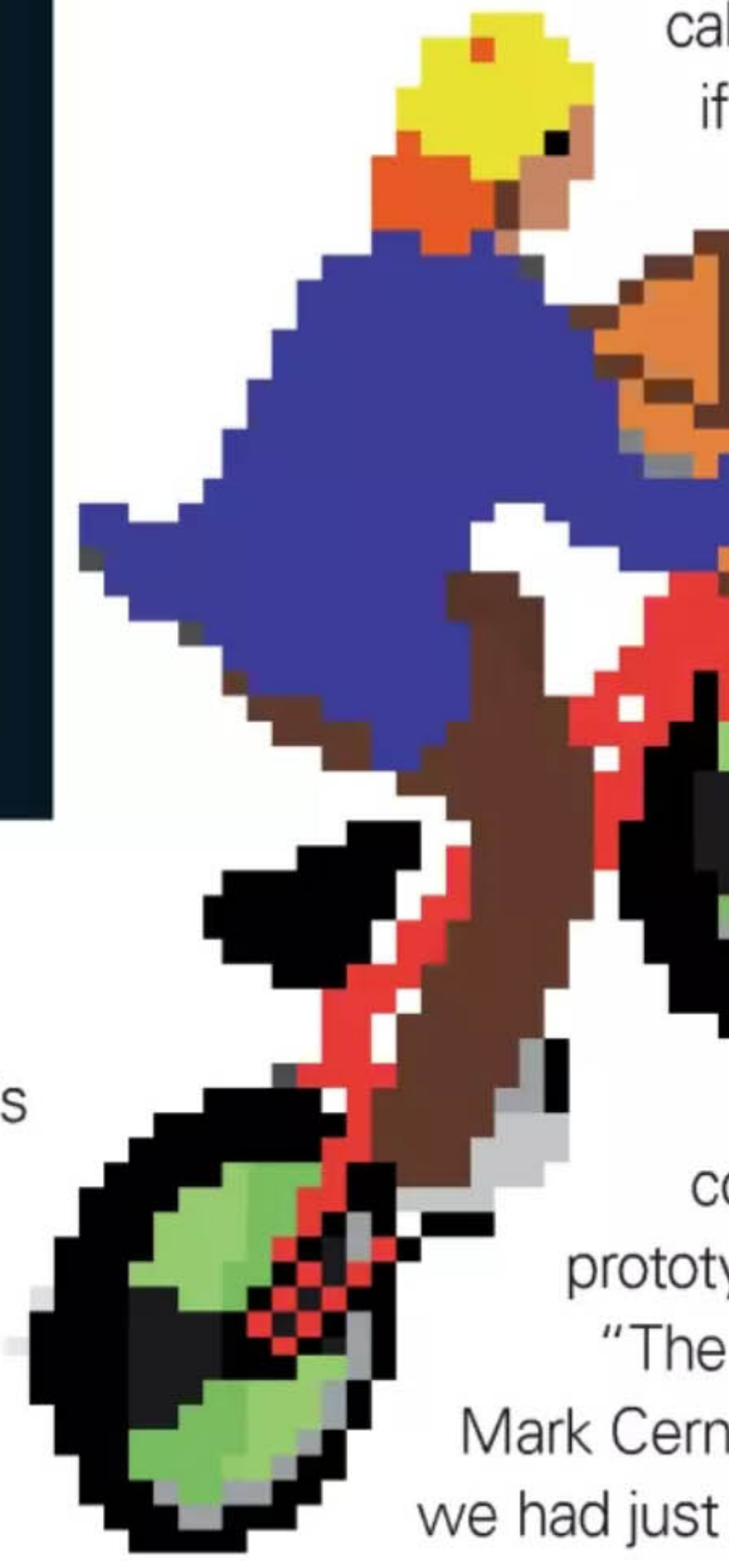
» As a reward after finishing your paper round, you got to ride along an obstacle course. Time to test those BMX skills.



» Successfully finishing the obstacle course saw you being treated with a pleasant congratulations screen.

With *Paperboy's* controls system now decided, one other factor had to be taken into consideration: namely, would the chrome handlebars be strong enough to withstand the vigorous assault of an arcade gamer?

"There was a guy at Atari called Dave Stubben," begins Ralston, which immediately causes Salwitz to burst into fits of laughter as the story begins. "He was one of the senior execs at Atari games, and he was a very big, very strong guy. And in all the controls that we used there was always this thing called the 'Stubben rule'. Basically, if the controller could survive Dave then it was going to be okay. So obviously with this controller, this piece of chrome steel that was bolted onto the front of the machine had to be really resistant to leverage and anything else you could think of." While the final handlebars eventually passed the test with flying colours, Salwitz recalls an earlier prototype that didn't fare quite so well…

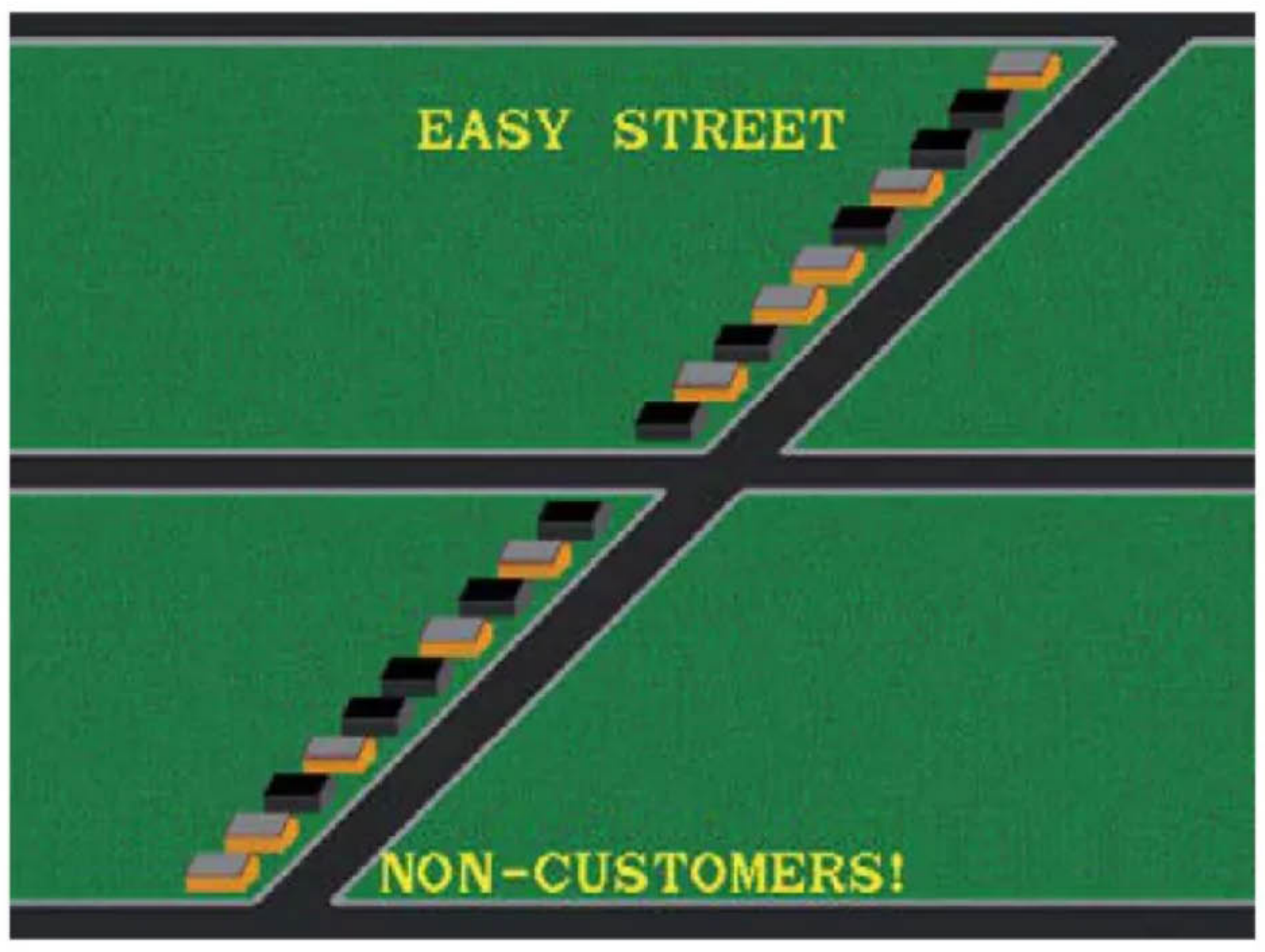


"The funniest story I remember is that Mark Cerny came into the lab one day and we had just gotten this brand-new controller in that we were very excited about it. So anyway, I looked at Mark and told him, 'You just watch, it's going to survive and everything.' He basically looked me straight in the eye and said, 'No it won't.' He then decided to give the thing a massive twist to see if he was right and it practically came off in his hands. It didn't survive him at all and Mark's not a big guy, so that particular incarnation never even got close to the rule."

> "YOU COULD TELL YOUR GAME WAS GOOD. PEOPLE WERE COMING OVER AT LUNCH "
> JOHN SALWITZ

Eventually the handlebars were in place, and they helped to give *Paperboy* a thoroughly different experience to all the other arcade games that were around at the time of its release. Once you gripped those handlebars in both hands, you were ready to set off on your delivery route through suburban America. With its brightly coloured houses, traditional mail boxes and copious amounts of speech, you could almost imagine that you were actually riding down a sidewalk and delivering papers. To further add to the realism, Salwitz and Ralston ensured that the majority of obstacles you encountered also added to the authenticity. Therefore, dangerous dogs would chase you up the street, huge cars and motorcycles would zip across each road's junctions, and there were even remote controlled cars and self-aware lawn mowers to avoid. While the hazards would get stranger the further you progressed, they were nothing like the obstacles that Salwitz and Ralston had originally intended to use…

"Initially, we wanted *Paperboy* to have a really surreal feel to it," explains Salwitz. "We went pretty crazy for a while and the focus groups that saw it just didn't get it," remembers Ralston. "We had things like speedboats



» At the beginning of each day you'd be immediately told how many subscribers you had left.

» Mindscape's sequel was so bad, this is the only mention we're going to give it. The N64 version wasn't much better.

SYSTEM II
PAPERBOY
ATARI GAMES

» The original arcade flyer. Note the machine shot showing those famous, now iconic handlebars.

going down the middle of the street, runaway pianos, giant snails at the various junctions and even ducks in business suits that would walk up and down the sidewalk. Just really bizarre stuff like that," he chuckles. "The actual perspective was the same, the look of the art style was the same, and it was just all these wacky characters that weren't received very well.

"For some reason when people rode down the street they just didn't expect to see them," continues Salwitz. "Which is strange," interjects Ralston who, like Salwitz, is once again fighting back laughter. "I see these things all the time."

Gender issues

Ralston may well be used to seeing the grim reaper and unicycle-riding punks whenever he goes for a Sunday drive, but one thing that is noticeably absent from *Paperboy* is the ability to play as a girl. As Salwitz explains, the absence of a female delivery girl was down to memory restrictions and not for any other reason.

"Physically, our ability to put more than one character into that hardware would have been very expensive at the time," he tells us. "The system constraints just stopped you from doing a lot of things and you were literally counting every byte you were putting into things. The central character of the game used an enormous amount of memory, particularly graphics memory (EEPROM) so the storage of that would have been very prohibitive. So we were really stuck with a single character no matter what we did. As for the choice between whether it should have been a paperboy or a papergirl, you just kind of go with the thing that's the most obvious, except of course for the giant snails and all those other things… I'm sure we talked about it at the time, but there would have been no practical way for us to get more than one character in the original game."

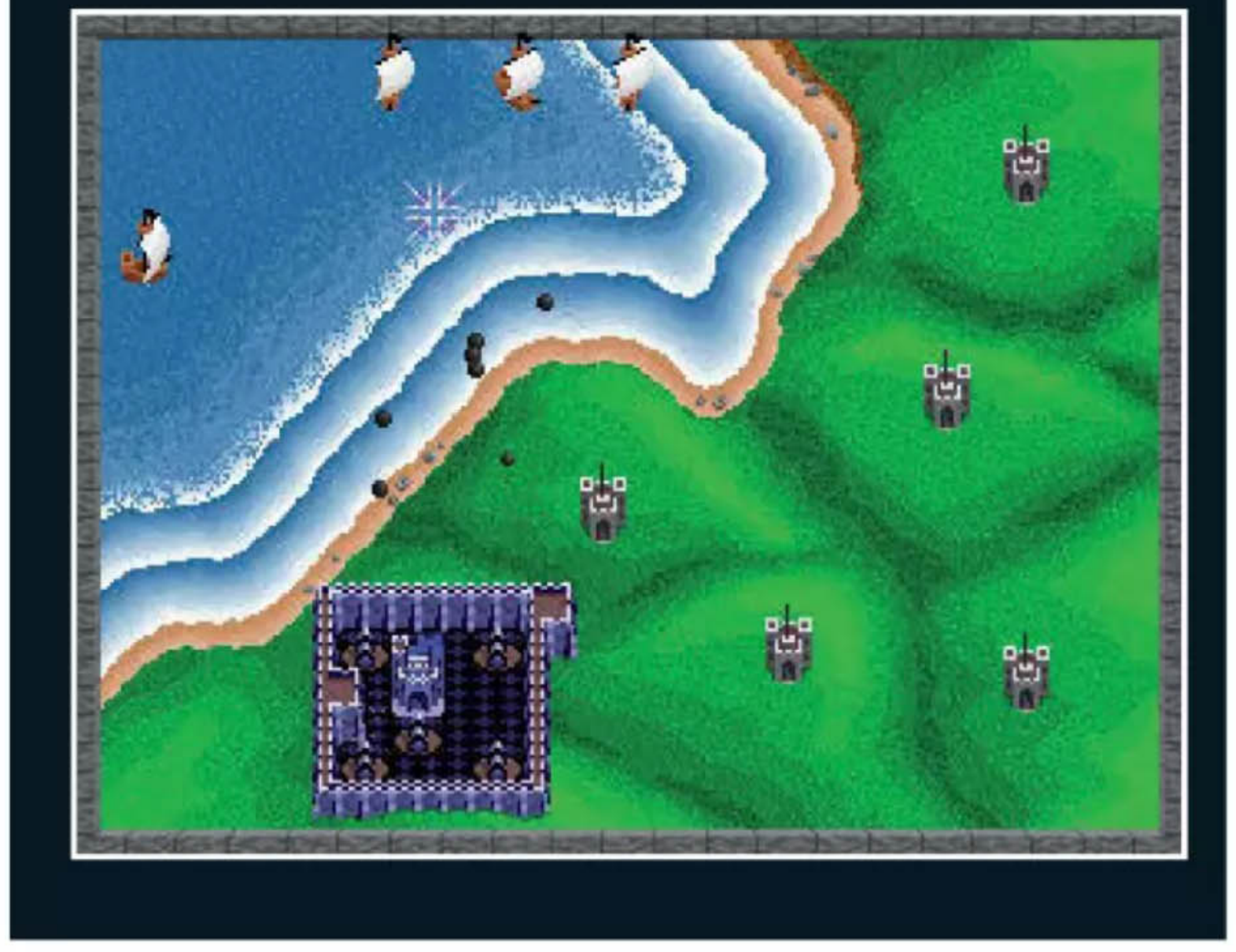
With the thought of what didn't make it into the game still fresh in their minds, we wanted to find out what other aspects of *Paperboy* ended up on the cutting room floor and failed to make it into the game.

DEVELOPER HIGHLIGHTS

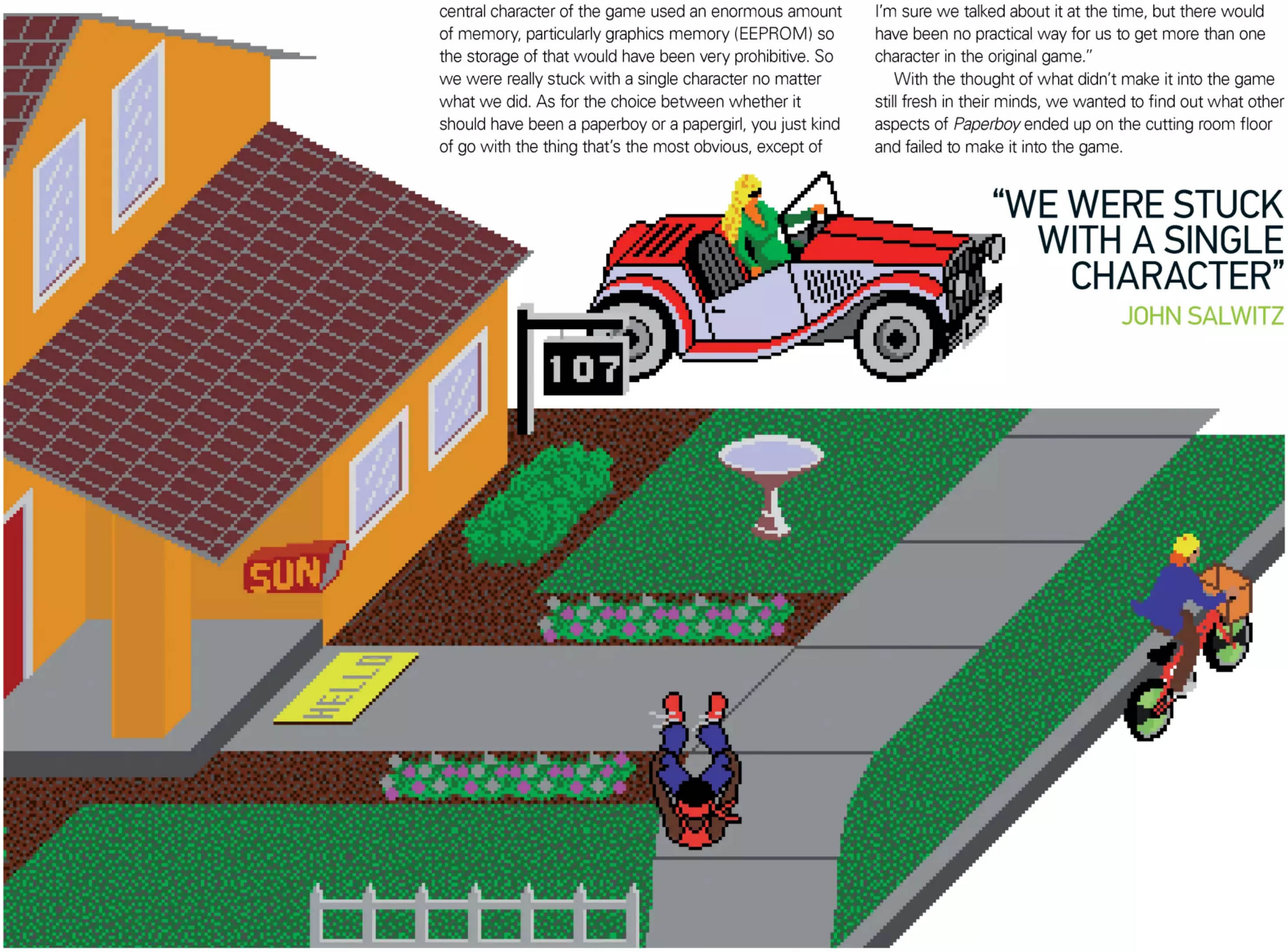
720°
System: Arcade
Year: 1986

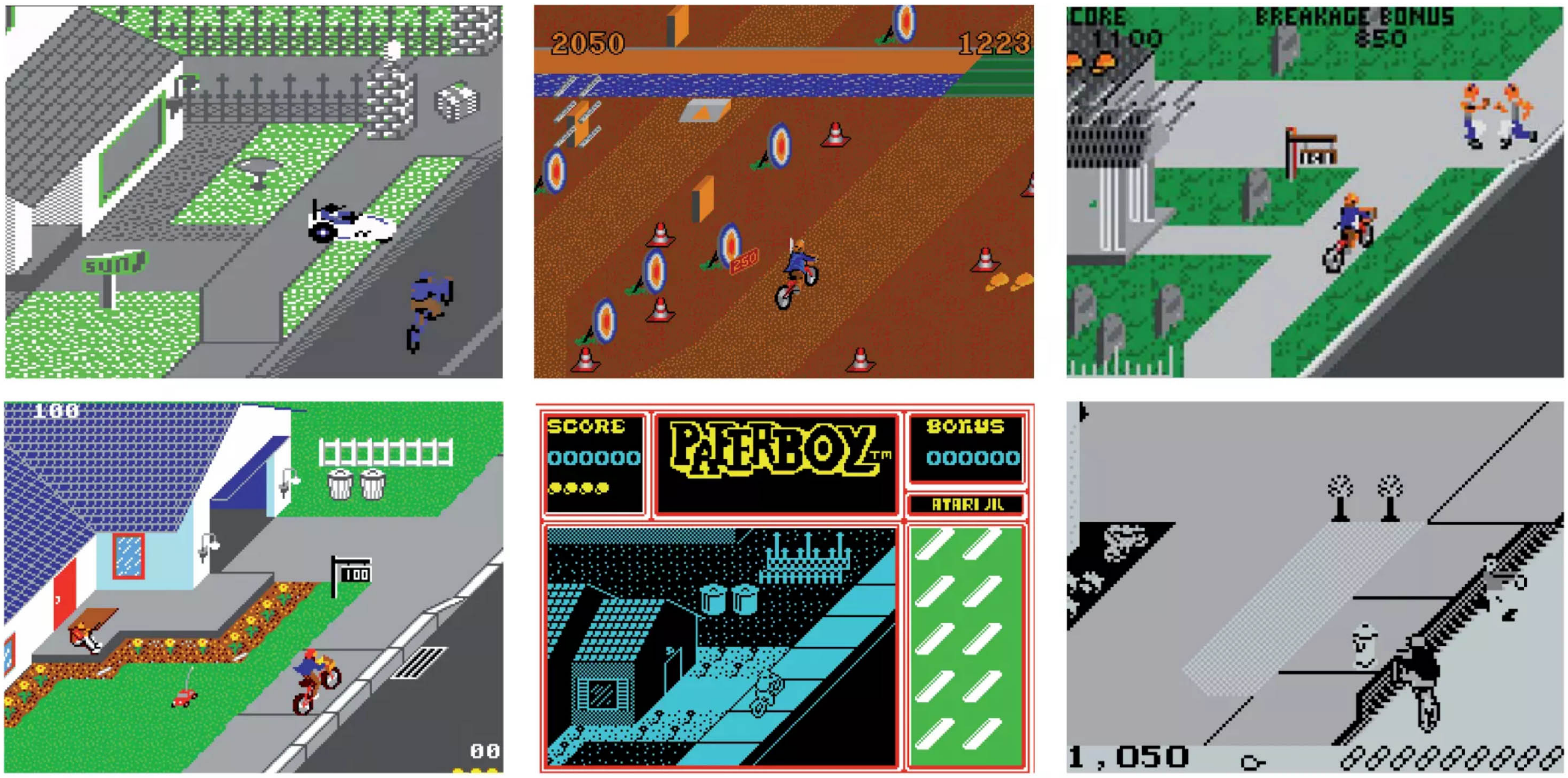
Klax
System: Arcade
Year: 1989

Rampart (Pictured)
System: Arcade
Year: 1990



> "WE WERE STUCK WITH A SINGLE CHARACTER"
> JOHN SALWITZ





» Due to its arcade success, *Paperboy* appeared on a variety of home formats, so we've gathered a small selection here. (Top row from left to right: C64, Amiga, Atari Lynx. Bottom row from left to right: Master System, Spectrum, Game Boy.)

"Well, I remember just how much trouble we went to in trying to give the Paperboy a throwing animation," muses Ralston. "In the end though it was proving to be such a nightmare we just decided that he shoots them out of his head." Other missing features included proper physics and motion that would see newspapers bounce off walls or get caught in hedges; a larger obstacle course, which at one stage was even going to be the basis for a sequel; and the ability to ride down the other side of the street. "I particularly liked this one," admits Ralston, "and we talked about how we would implement it for ages. We initially talked about going down the other side of the street and having it go in the reverse direction and bringing more traffic into play, but then we would have had the safety commission coming down on us even more."

> "OUR ABILITY TO PUT MORE THAN ONE CHARACTER INTO THAT HARDWARE WOULD HAVE BEEN VERY EXPENSIVE AT THE TIME... YOU WERE LITERALLY COUNTING EVERY BYTE" JOHN SALWITZ

With the benefit of 23 years of hindsight we are eager to know what changes Salwitz and Ralston would have made to the game if they'd had the time and opportunity.

"One thing we did think about at the time was to ship *Paperboy* as a serialised game," reveals Salwitz. "At the time everything in arcades was based on how much replay you would get out of it, so we did once consider shipping out just Easy Street and then subsequently releasing the other two roads three to six months later. I think if we'd gone with this serialised release we would have definitely sold more units."

"Man, that's greed, pure greed," laughs Ralston. "If I was to return to *Paperboy* today the only element I can think of expanding would be the whole BMX biking side of the game and maybe working a trick-based scoring system into it. You could have style points for throwing papers while in a jump, or doing a flip or whatever. I think that would have worked really well…"

While Ralston muses about his super-athletic Paperboy, we wanted to ask Salwitz why he thinks their creation remains so enjoyable to so many gamers. "We had a wonderful team," he concludes, "and the people involved are still my very dear friends. We had a really good time working together, and to be able to work with four or five people and have each of them focused on a completely different part of the game and still be able to talk about it afterwards is a really rare and wonderful experience. I feel *Paperboy* was successful because the team was successful."

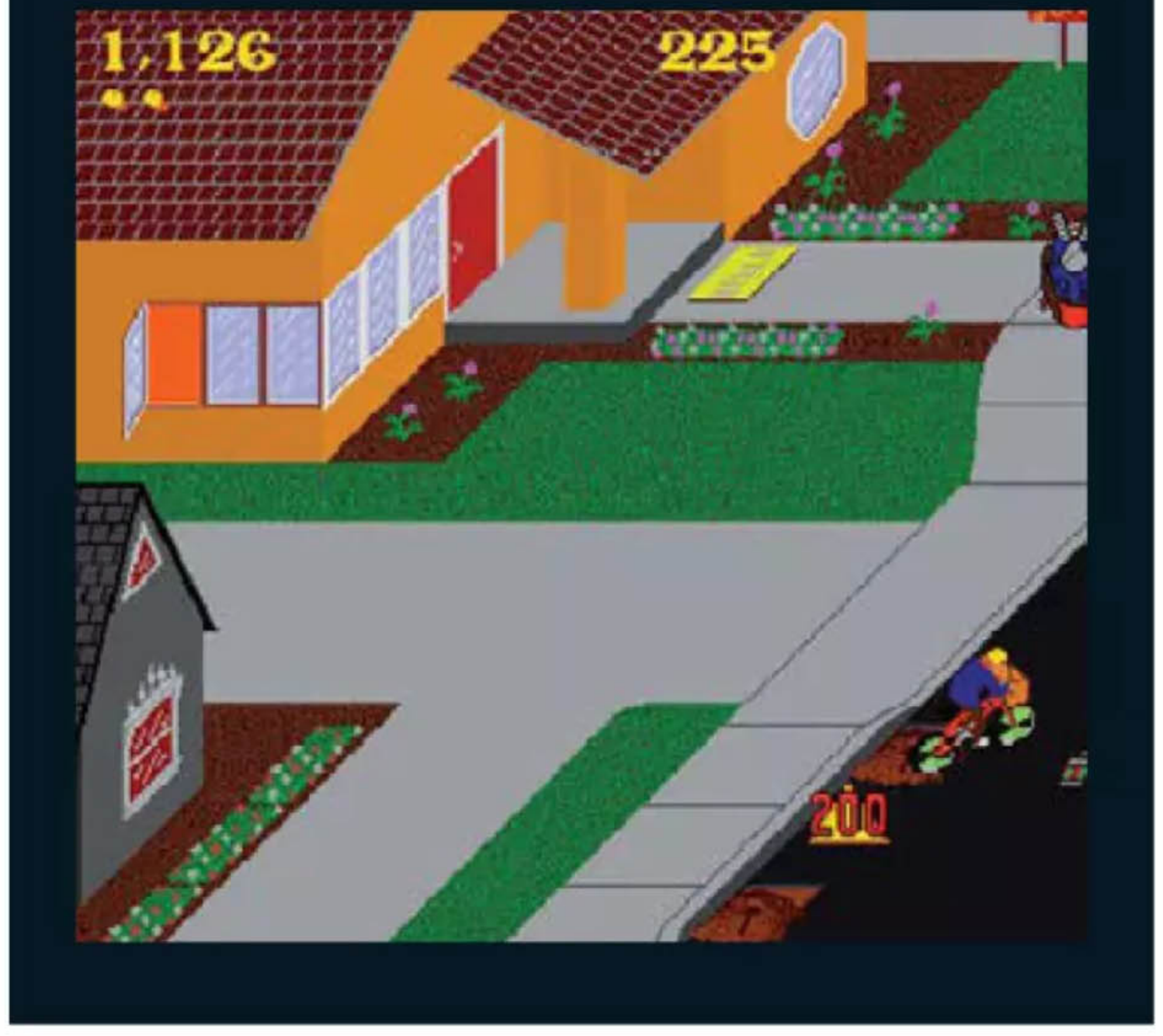
28 YEARS ON...

Amazingly, Atari's *Paperboy* is still wowing gamers, and it's on Microsoft's Xbox 360 of all things.

Converted by Digital Eclipse, the Xbox Live version of Paperboy features online leader boards, a variety of achievements (some of which are incredibly hard to earn) and an assortment of online two-player games.

Sadly, while the game is as enjoyable as ever – although if we're brutally honest, the 360's D-pad isn't a match for the arcade machine's handlebars – taking the title online wasn't perhaps the smartest move that Digital Eclipse has ever made, mainly because it's just so damned laggy.

Still, it's certainly not bad for 400 points (around £3.50) and while an updated look would have been nice it certainly beats being a paperboy for real.



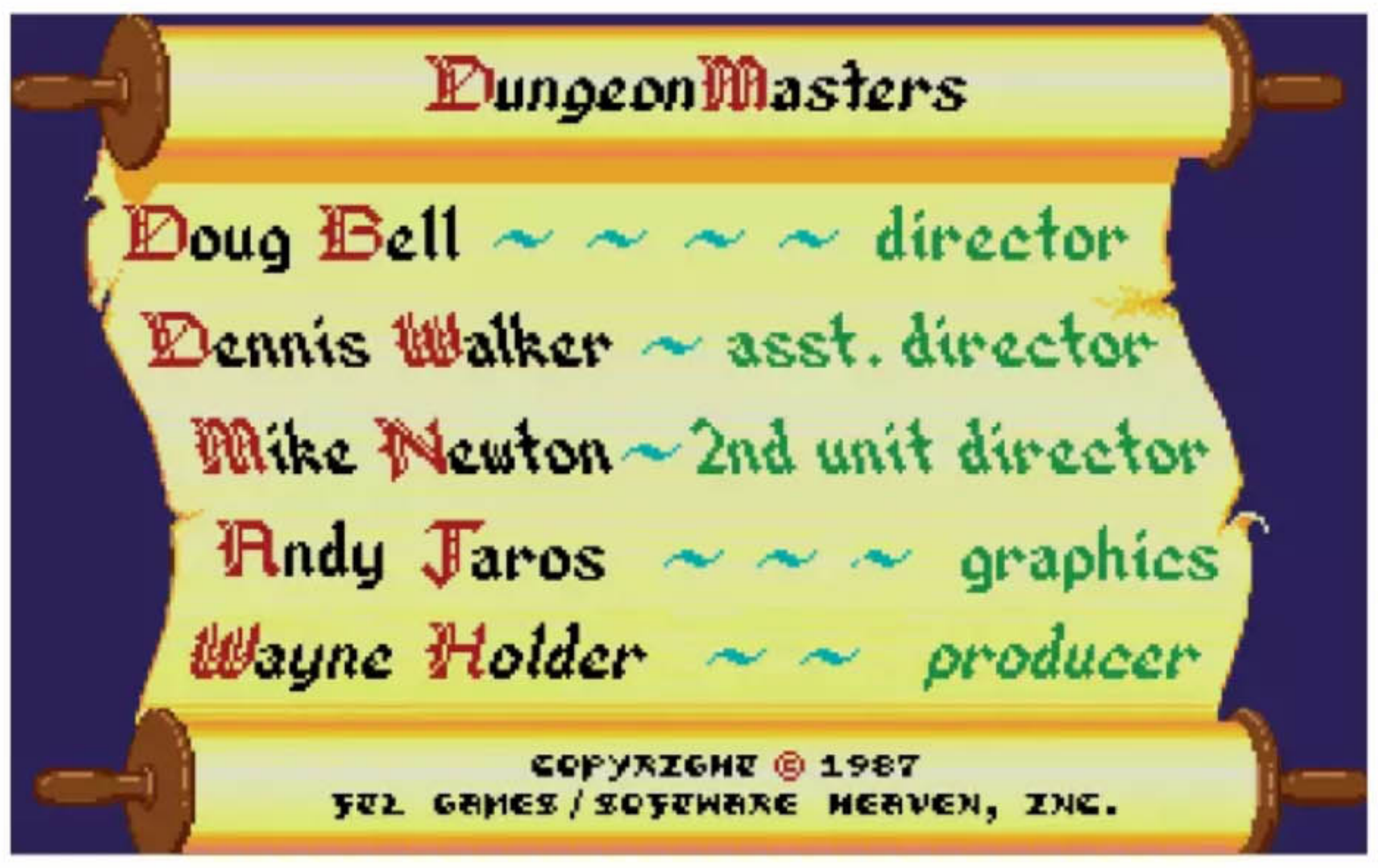
THE MAKING OF DUNGEON MASTER

WHEN TINY SAN DIEGO STUDIO FASTER THAN LIGHT (FTL FOR SHORT) RELEASED DUNGEON MASTER ON THE ATARI ST IN 1987, THEY KNEW THEY HAD CREATED SOMETHING SPECIAL. WHAT THEY COULDN'T HAVE PREDICTED WAS THE TREMENDOUS WORLDWIDE SUCCESS THE GAME WOULD ACHIEVE AND THE IMPACT IT WOULD HAVE ON FUTURE...

Dungeon
master

IN THE KNOW

- **Publisher:** FTL
- **Developer:** In-House
- **Platform:** Atari St
- **Year released:** 1987
- **Genre:** Role-Playing Adventure
- **Expect to pay:** £8+ ($10+)



DungeonMasters

Doug Bell ~ ~ ~ ~ director

Dennis Walker ~ asst. director

Mike Newton ~ 2nd unit director

Andy Jaros ~ ~ ~ graphics

Wayne Holder ~ ~ producer

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FTL GAMES / SOFTWARE HEAVEN, INC.

» The guys who made it happen.

Like so many partnerships forged in the early days of the videogame industry, the team responsible for *Dungeon Master* came together at school. "Andy Jaros and I met during college, attending the University of California," recalls Doug Bell, who worked as director, lead designer and developer on *Dungeon Master*. "Andy had received an Apple II from his parents and we played Ultima on it and later Wizardry".

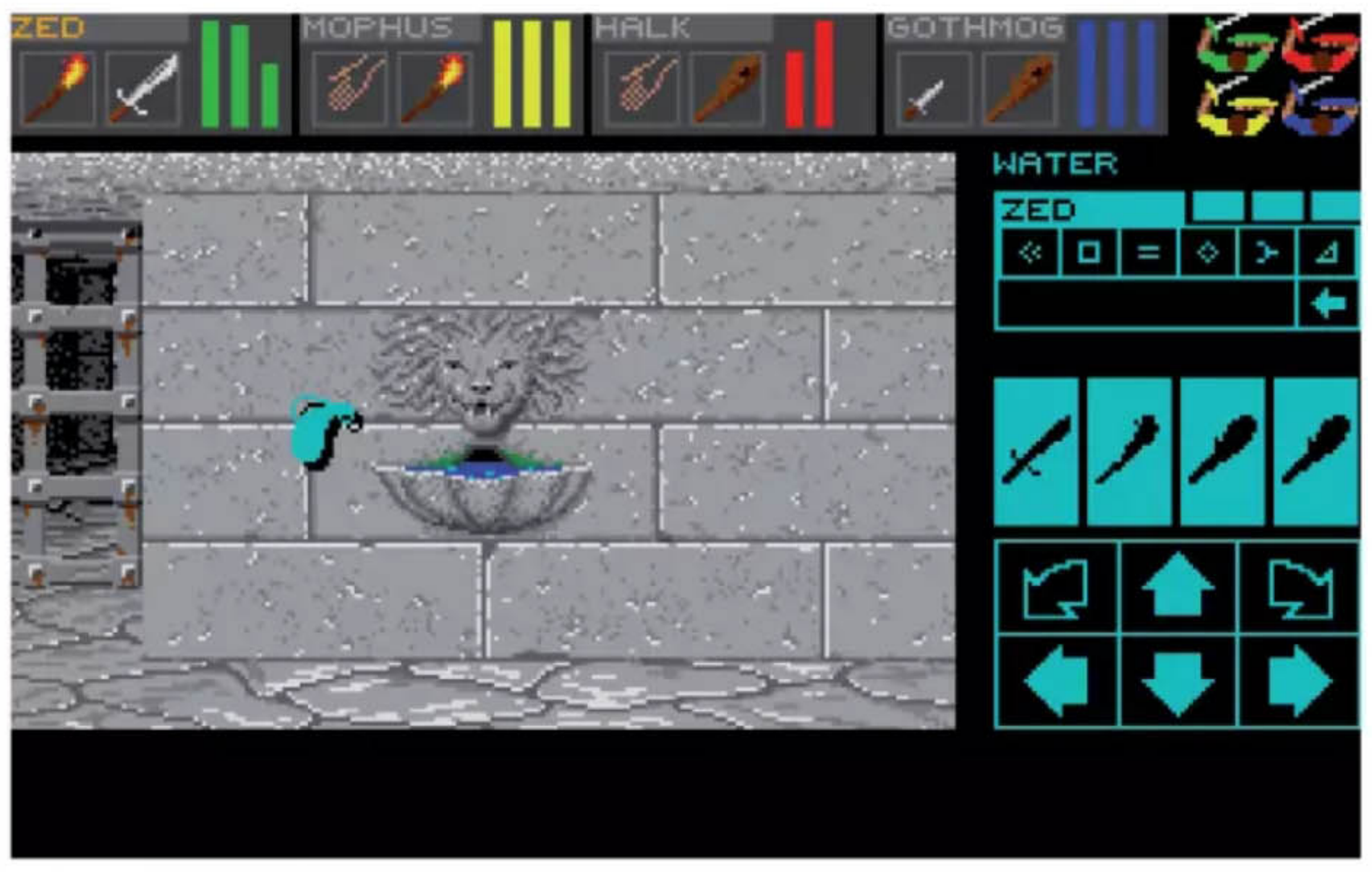
It was during these mammoth gaming sessions that Bell finally realised his true calling: "I thought I could write a better game than Ultima," he modestly comments. With this goal in mind the two friends founded their own development studio called 'PVC Dragon' (PVC as in the material used to create floppy disc storage wallets). Raising capital by selling shares in the fledgling company to close friends and family the intrepid duo started working on their all-conquering fantasy title, which they named *Crystal Dragon*. However, after two years of hard slog the company coffers were running dry and a difficult decision had to be made. "We decided to see if another game company was interested in picking up our game," continues Bell. "We had recently moved to San Diego and contacted the local game companies, one of which was FTL, owned by Wayne Holder." FTL, responsible for Apple II classic *SunDog: Frozen Legacy*, took the pair on board in 1983, albeit on a temporary basis. "Wayne decided to take us on for a few months to get the game to a working state," Bell fondly remembers about the time.

"THERE WERE BASICALLY ONLY FIVE OF US. DENNIS WALKER AND I DID 90 PER CENT OF THE GAME PROGRAMMING"

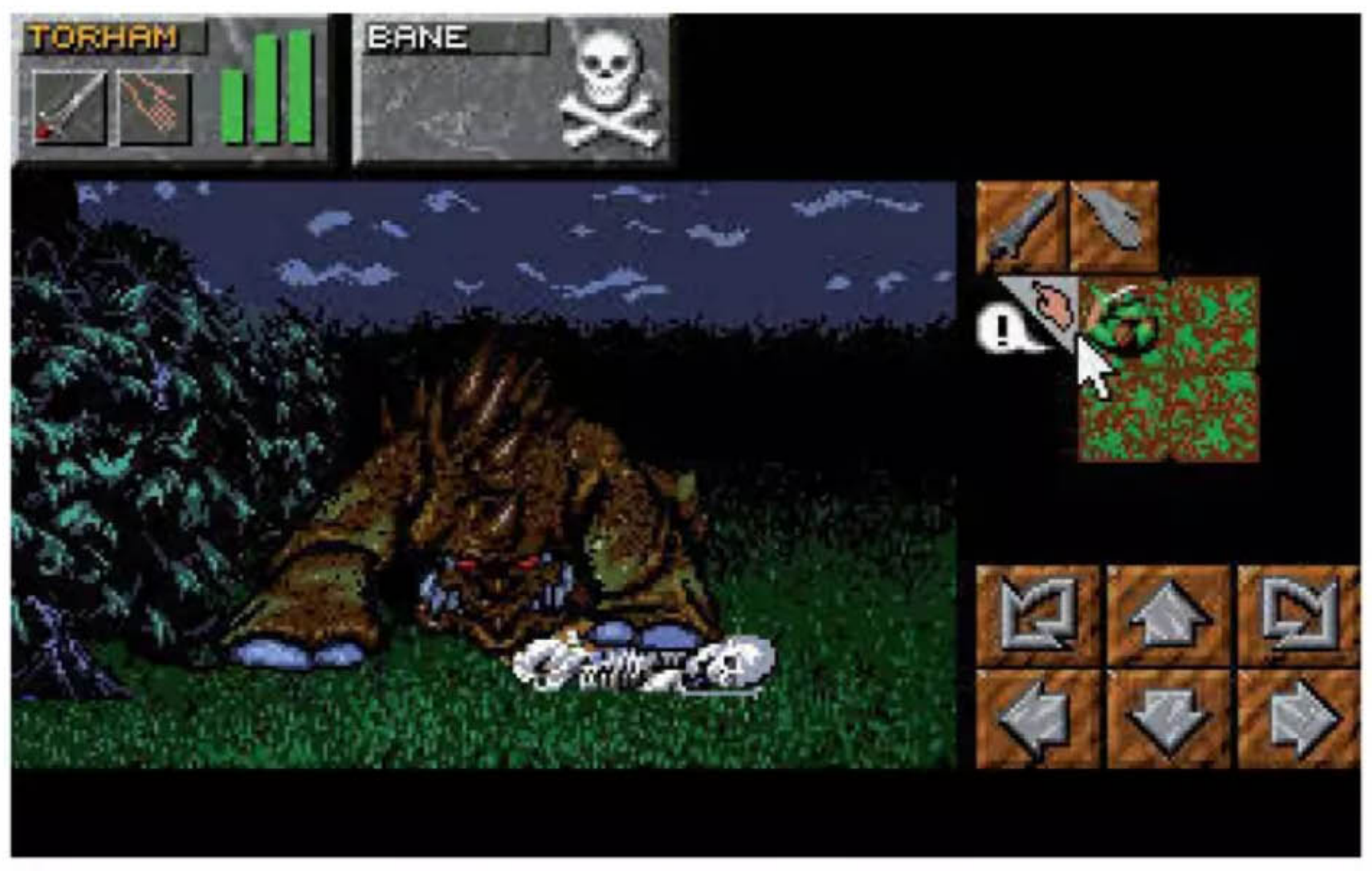
DOUG BELL

The Atari ST arrives...

A couple of months after joining FTL, Atari sent shock waves around the globe with the announcement of the ST home computer, and at FTL development on the Apple II version of *Crystal Dragon* was brought to an abrupt halt. "The Atari was a much more capable computer than the Apple, and better suited to *Crystal Dragon*, where we were spending a great deal of our time trying to fit it in the Apple's 64K" comments Bell. Unfortunately there wasn't time to port the work they had already done and complete the game for the debut of the new 16-bit machine. "We decided it was important to have a game at the launch of the ST, which was scheduled for late 1984" says Bell. "Wayne, Andy and I decided that porting *SunDog* was a better project than trying to develop a new game for the new platform". The team updated the sci-fi adventure for the 16-bit generation and the Atari ST version was released on Christmas Eve, 1984. A stunning game on the Apple II, it was even better on Atari's 16-bit system, thanks to stunning visuals that got gamers very excited.



» Drinking fountains become more rare the further you progress.



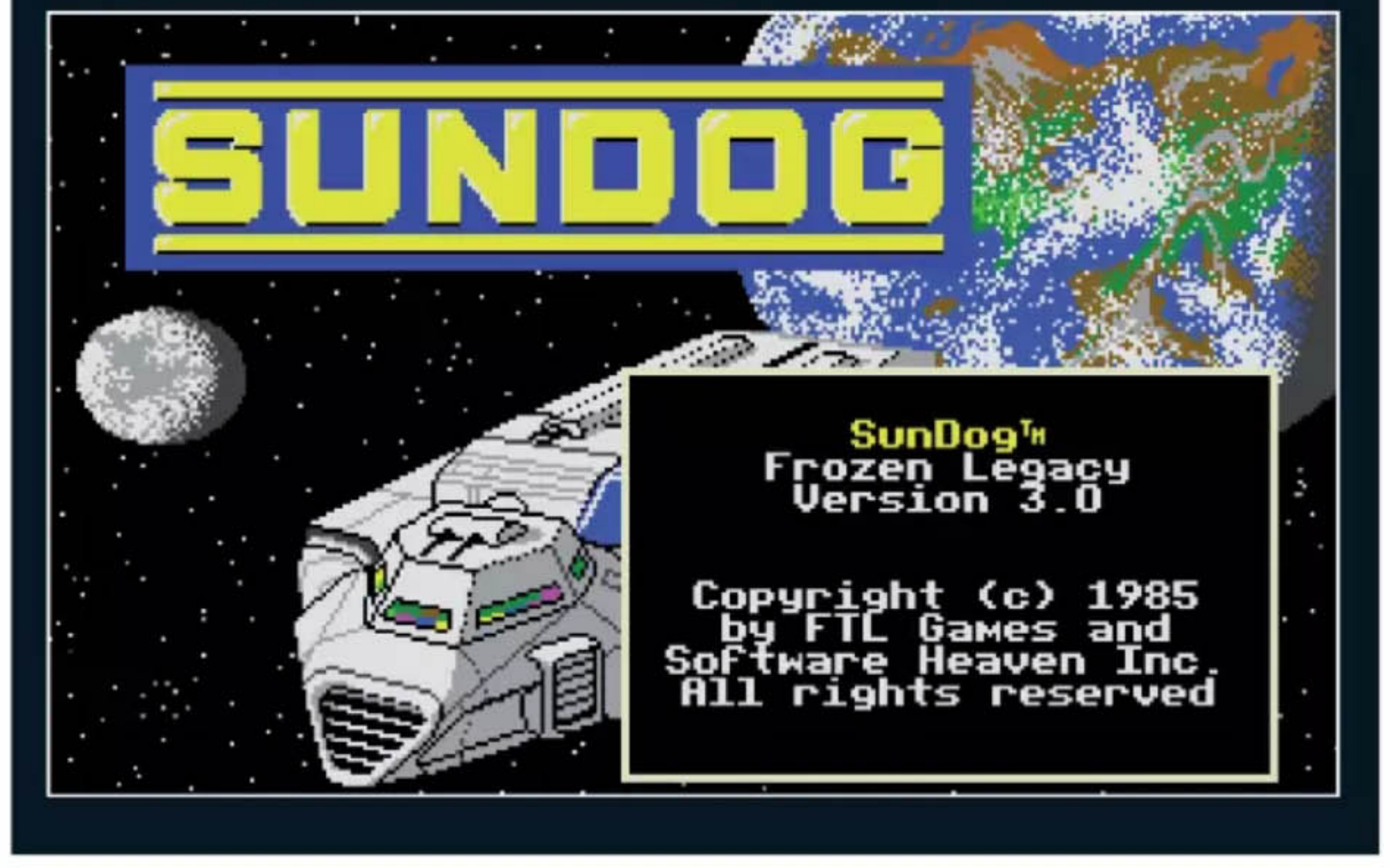
» *Dungeon Master 2* featured improved visuals and sound.

DEVELOPER HIGHLIGHTS

Sundog (pictured)
System: Apple II, Atari ST
Year: 1984

oids
System: Atari ST. Apple Mac
Year: 1987

Dungeon Master II
System: PC, Amiga, PC-9821, PC-9081, Apple Mac, Mega CD, FM Towns
Year: 1993: Japan / 1995: Worldwide



SunDog™
Frozen Legacy
Version 3.0

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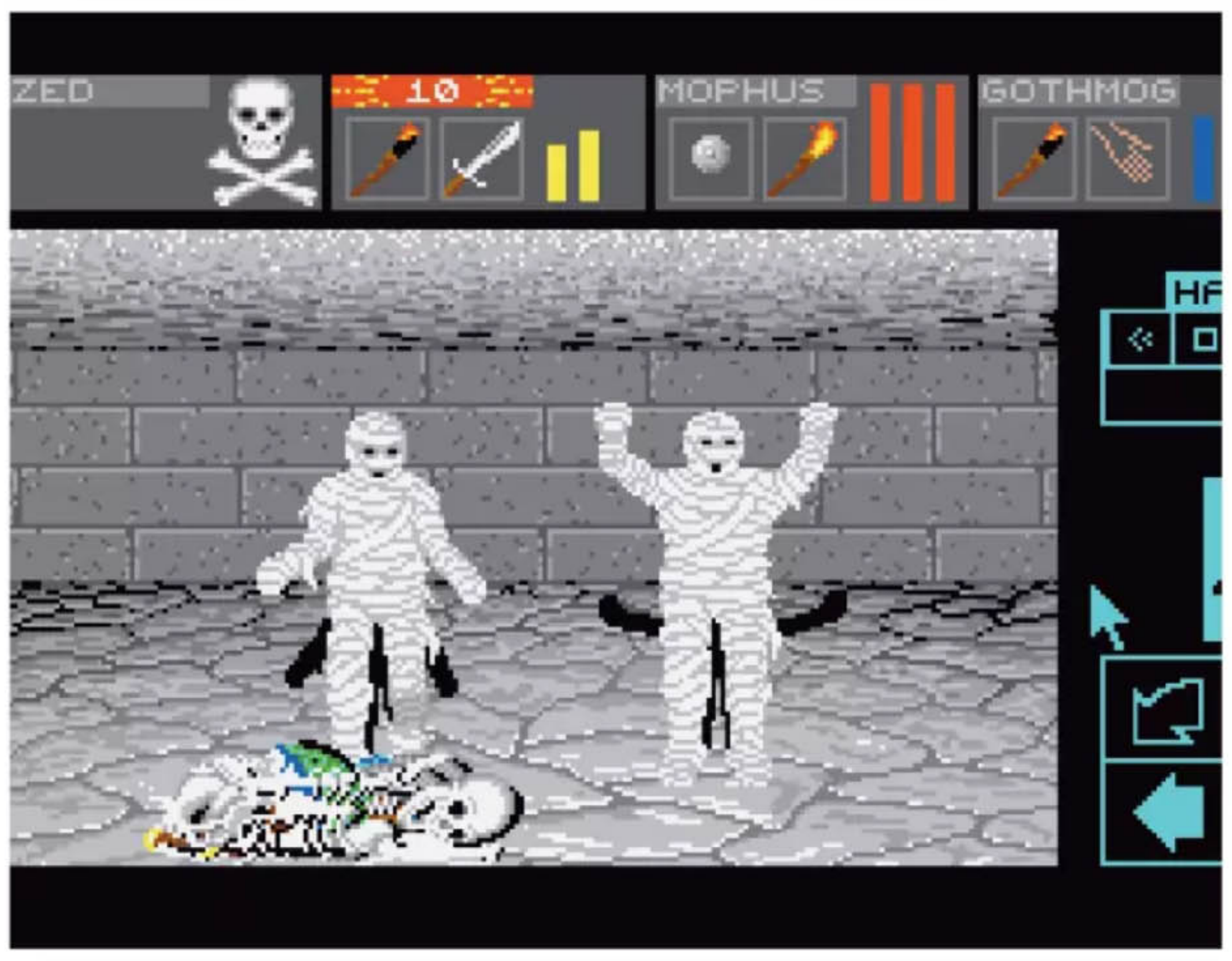
> “THE SCOPE OF THE GAME WAS INITIALLY GOING TO BE LESS THAN WE ENDED UP DOING
>
> DOUG BELL



» You'll never forget the first time you have to face off against mummies. They became one of *Dungeon Master's* most iconic monsters.

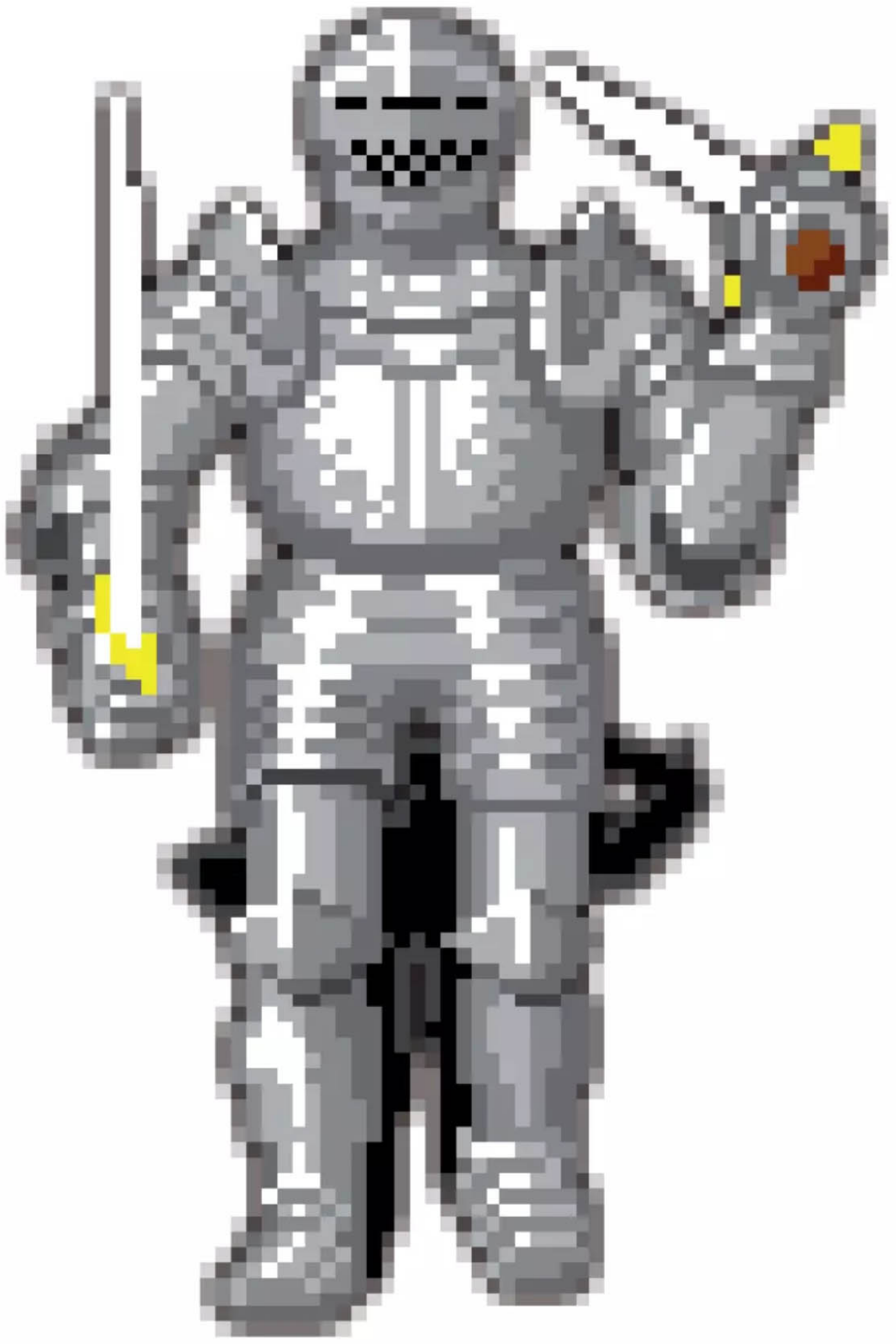
With one triumph and the very valuable experience of coding on the cutting edge ST under their collective belts, Bell and Jaros became full time members of the FTL team and quickly turned their attention back to *Crystal Dragon* – which had now been re-named *Dungeon Master*. The creative process called upon additional commitment in terms of programming – and the results were encouraging. “We started with a proof of concept to use a painter's algorithm (drawing from back to front) to create the dungeon,” says Bell when we quizzed him about the game's early origins. “We wanted to see what the performance was, and it was okay, but we realized that we needed to switch from Pascal to C. I spend three weeks learning C and rewriting the dungeon crawl in C, and the performance was better than we expected”.

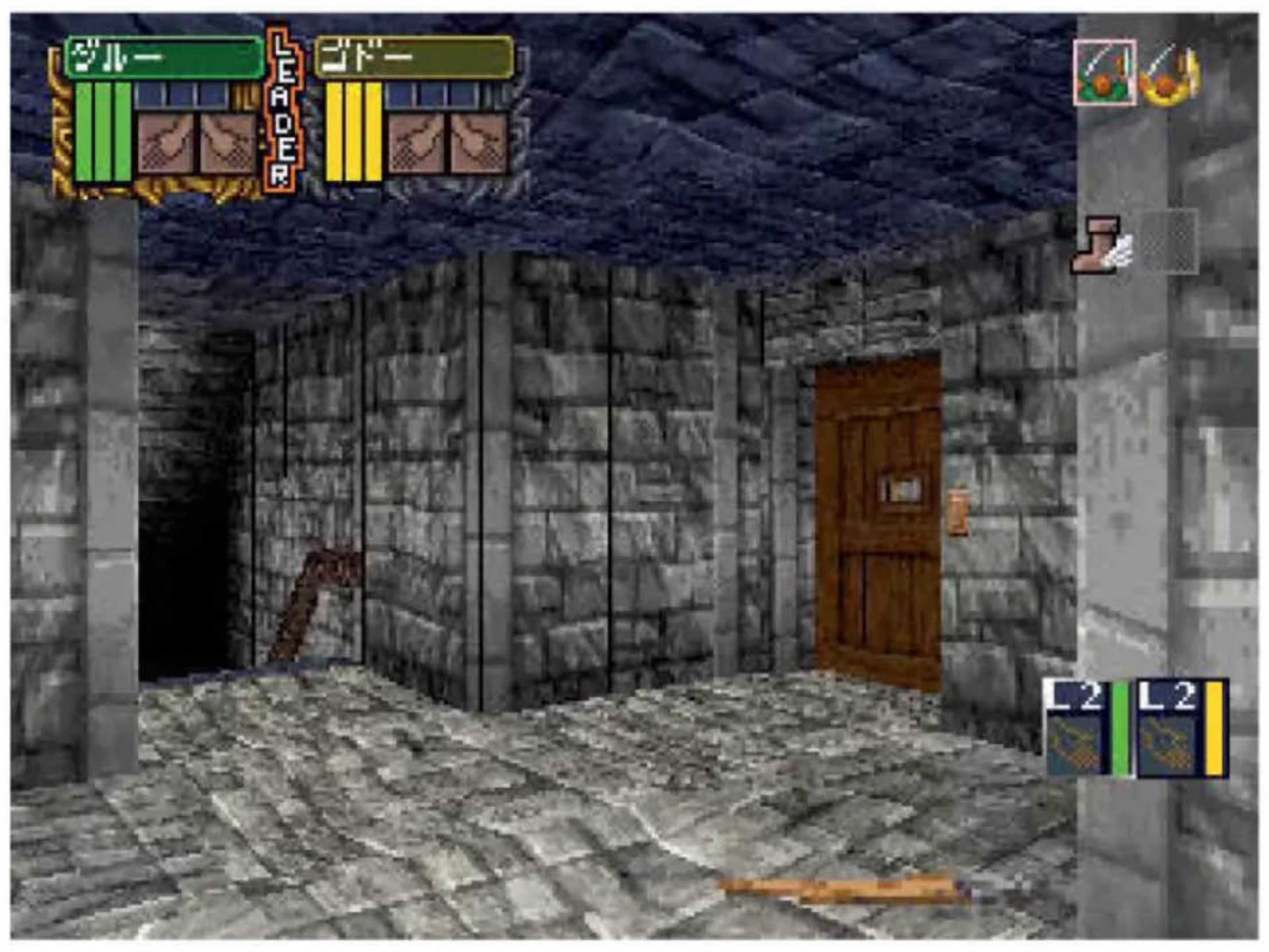
Small beginnings

Compared to the sprawling development studios of today, the core team behind *Dungeon Master* was minuscule. “There were basically only five of us,” recalls Bell. “Wayne did only a little of the programming – his biggest contribution was to figure out how to do digitized sound on the Atari's sound chip. Andy Jaros did all of the artwork. Mike Newton created the tools, including the *DCS* (*Dungeon Construction Set*). Dennis Walker and I did 90 per cent of the game programming.” Each team member had their own responsibilities, but additional brainstorming was welcome, as Bell confirms: “We all contributed the ideas that set *Dungeon Master* apart from other games. I think some of the biggest conceptual contributions were probably made by Wayne, particularly with regards to the user interface”.

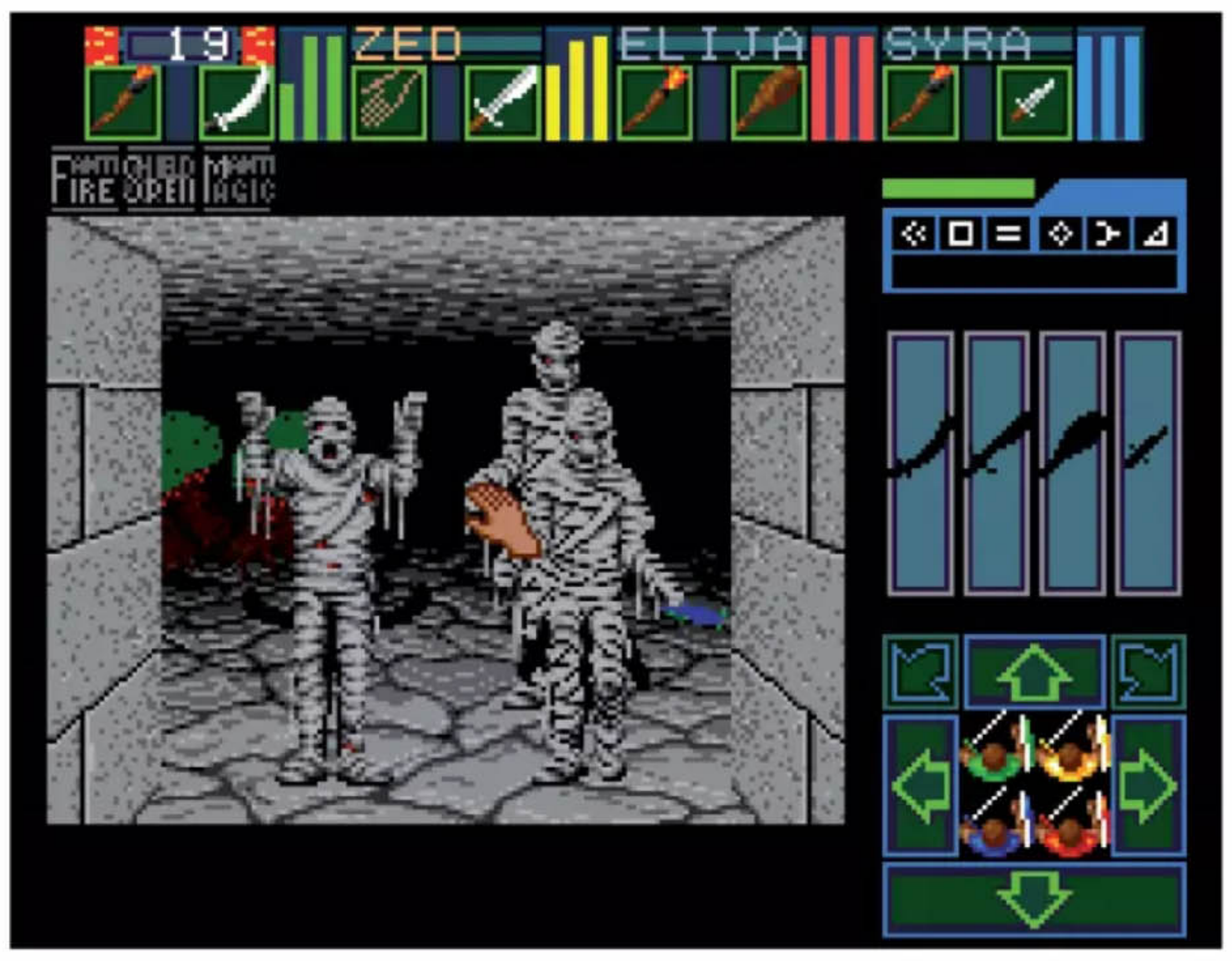
The team soon became aware that they could expand the concept beyond the original *Crystal Dragon* brief. “The scope of the game was initially going to be less than what we ended up doing,” comments Bell. “We had planned on releasing a game at the end of 1985, and in preparation for that, released a demo in May of 1985. Around September we realized that we had the potential to create a landmark game, so we decided to expand the scope of the game and forgo the 1985 release”. The extra time meant Bell and his team could achieve almost everything they had set out to do – a fairly unique event in videogame production: “There were some ideas we had to shelve, but for the most part we simply took the time to make the game as good as we could without being dictated too much by the schedule,” he continues.

Dungeon Master would prove itself to be a tremendously immersive experience and boasted a degree of realism that was seldom seen in role-playing titles before or since. Characters required food, water and sleep in order to survive, torches were essential to light the dim passageways (and would burn themselves out after a period of time) and some enemies could be eaten once

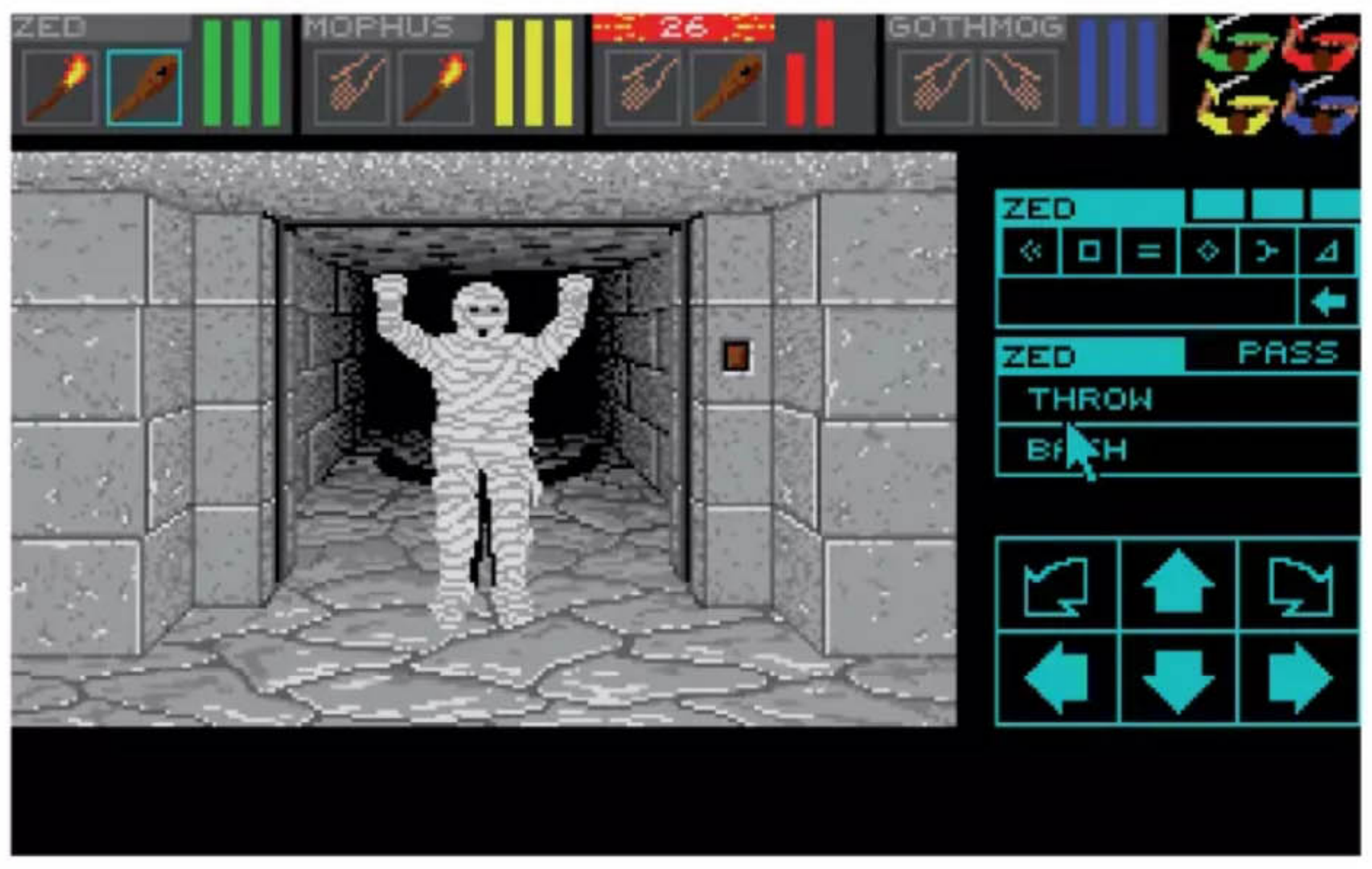




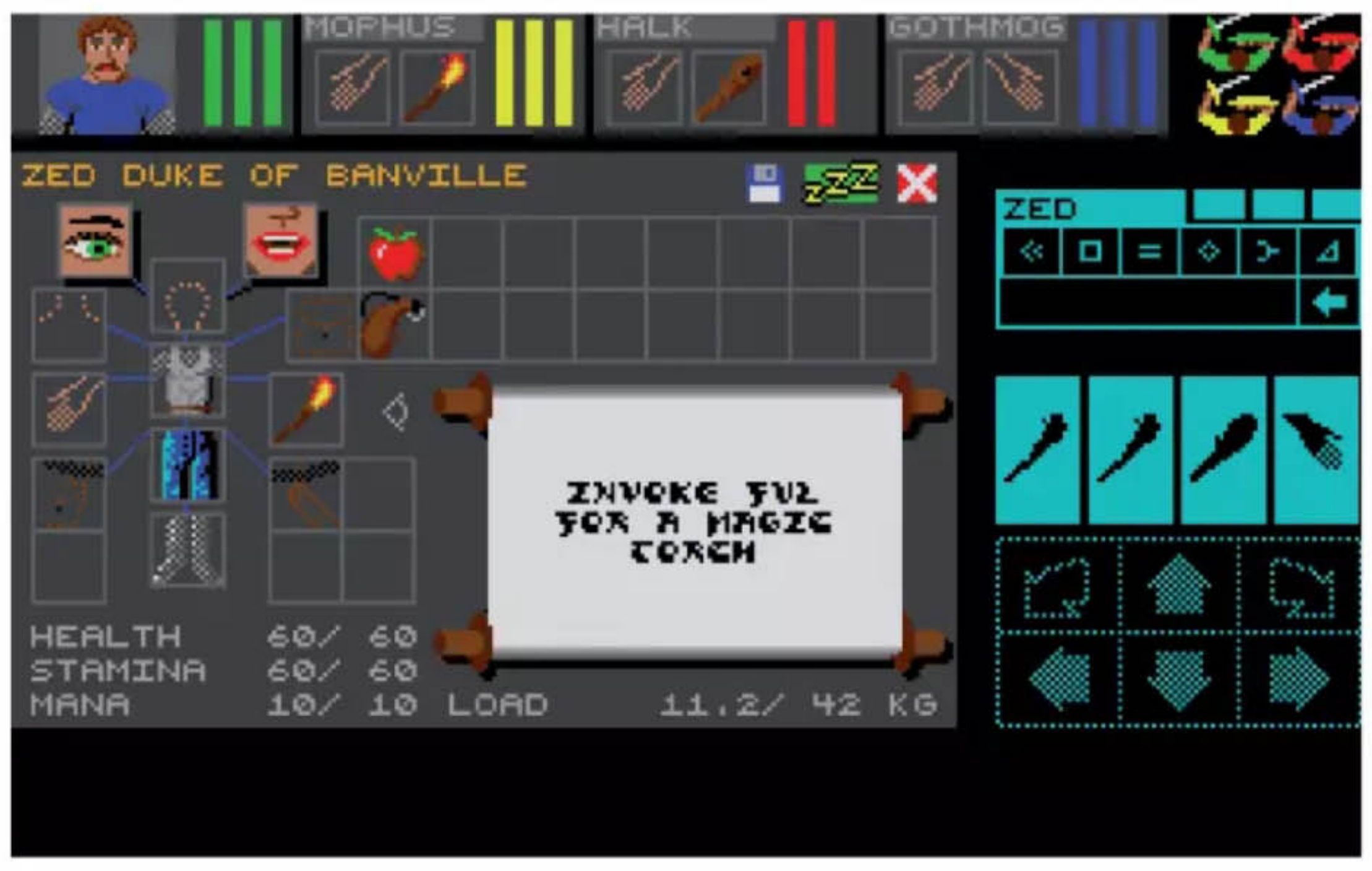
» *Dungeon Master Nexus* took the series into true 3D.



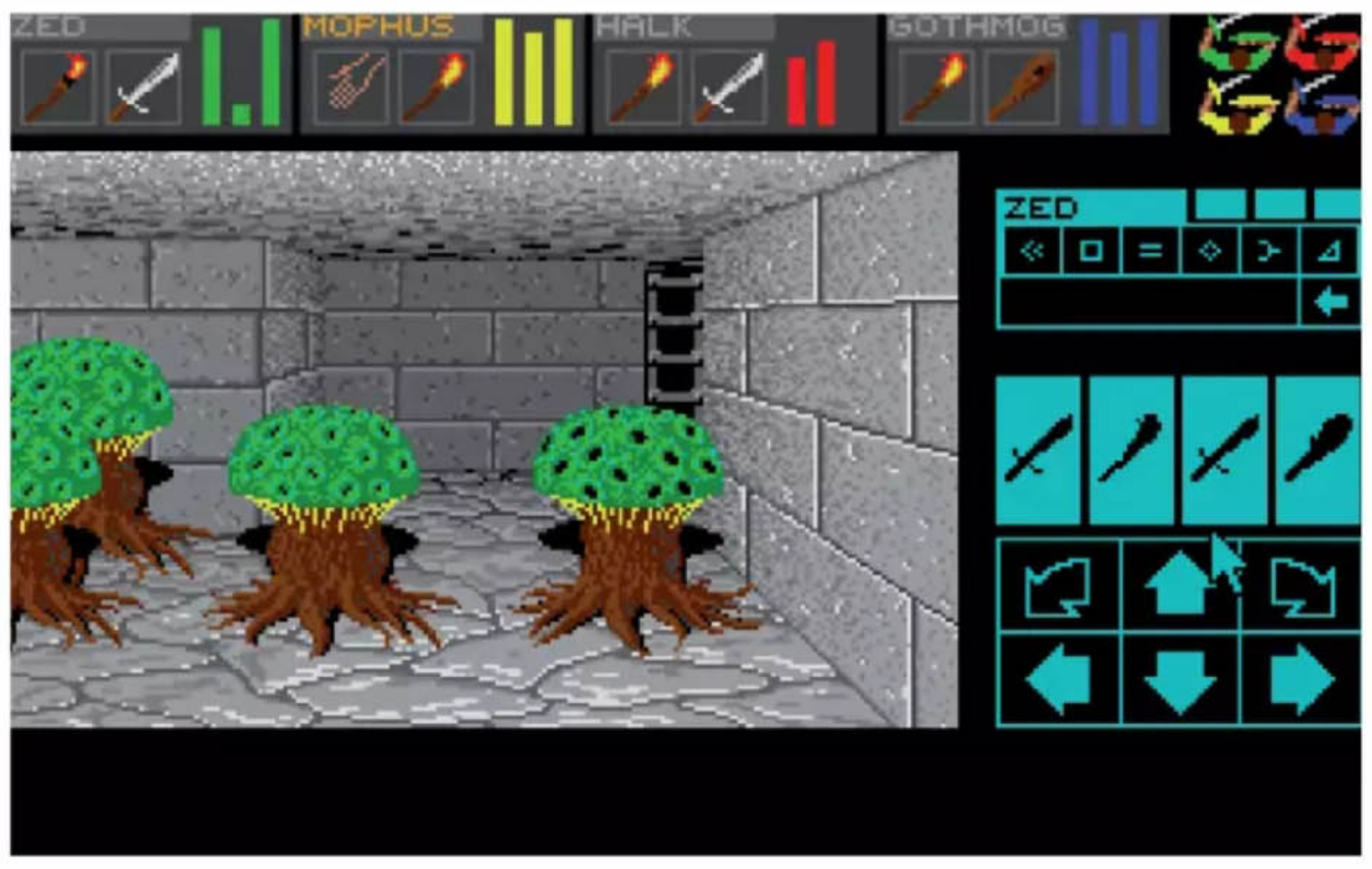
» The SNES port contained the Super FX chip – although it's hard to tell how it was used.



» Mummy! Help!



» Scrolls reveal handy hints and various spells.



» Tree-like Screamers emit a high-pitched sound to inflict damage on you.

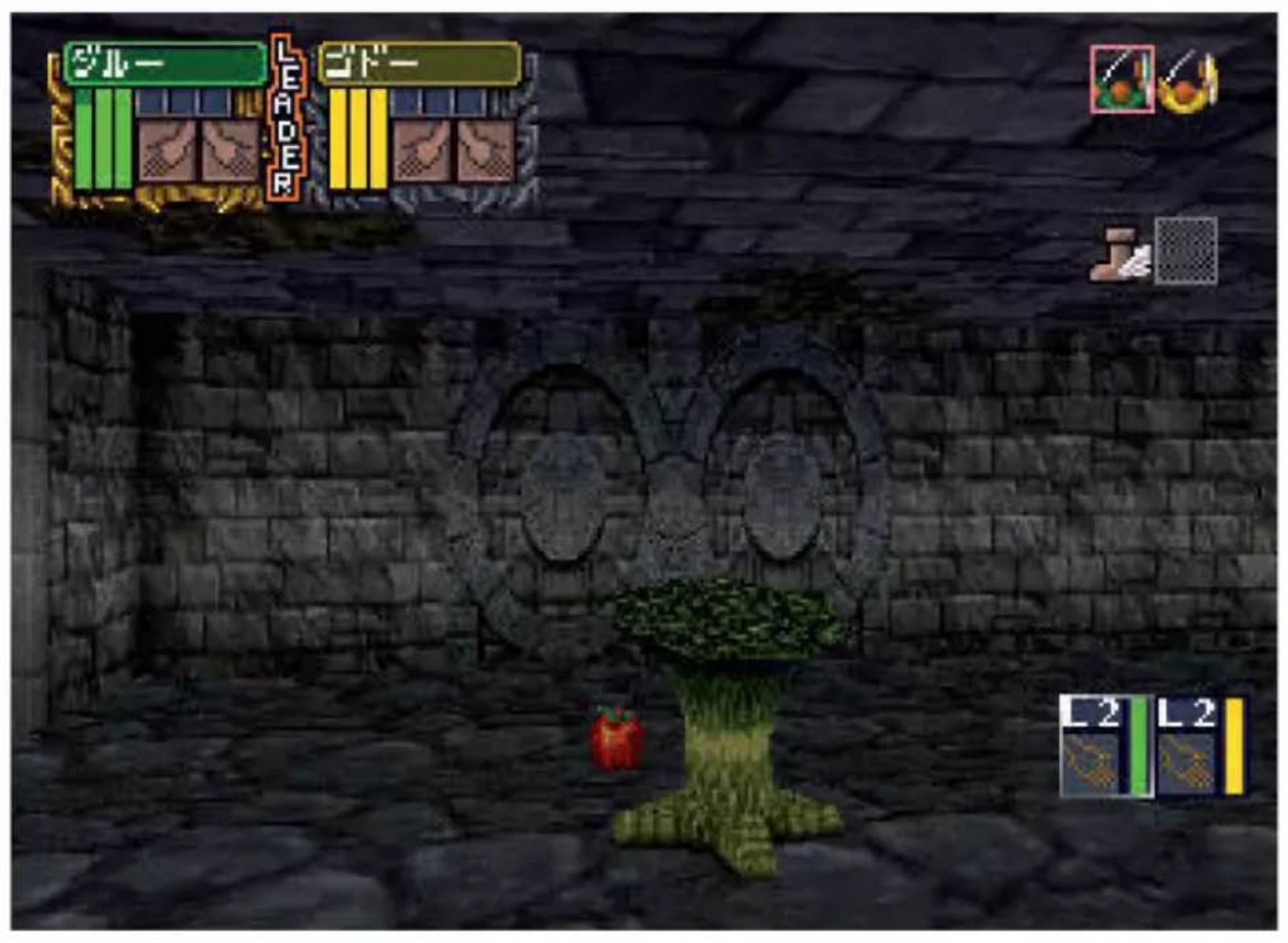
slain. However, as impressive as these elements seemed at the time, most had been on the drawing board since the early days of *Crystal Dragon's* development and Bell feels that *Dungeon Master's* merits actually lie elsewhere: "I think the user interface, graphics, sound and gameplay were what set us apart, and to a much lesser extent, the refinements of what previous dungeon games had done". Indeed, FTL's game was one of the first adventure titles to ditch the keyboard in favour of a fully mouse-driven interface. Another massive breakthrough was the fact that the game took place in 'real time' – role-playing games up to this point were almost always turn-based affairs – just like the tabletop games from which they took their inspiration.

> "I THINK IT'S SAFE TO SAY THAT NO GAME EVER GOT AS MUCH ONTO A 360K FLOPPY DISK"
>
> DOUG BELL

Although the enemies were gifted with only a handful of animation frames, *Dungeon Master* was a masterpiece of spooky set pieces and literally dripped with oppressive atmosphere. "We wanted to create an immersive experience," states Bell about *Dungeon Master's* atmosphere. "That was the guiding principle behind having the action take place in the dungeon as much as possible. The scary aspect really just evolved from the fact that up to that point there had not been a real-time 3D dungeon game with the level of graphics and sound in *Dungeon Master*. Once you were sucked into the game it didn't take much to scare you".

This level of immersion was so cherished by Bell and his team that they didn't want anything to shatter it. "We were targeting the Atari 520 ST on an SS 360K floppy disk. We didn't want to have to interrupt the gameplay with disk swaps. A lot of the technology in *Dungeon Master* was spent on compression/decompression algorithms. When fully expanded, the game that fitted onto a single floppy disk was about 1.6M. There was a sophisticated memory manager that kept the graphics compressed in memory so that we could fit more." Bell is justifiably proud of his team's achievement in this regard: "I think it's safe to say that no game ever got as much onto a 360K floppy disk or into the Atari 520ST's memory as *Dungeon Master*".

Released in 1987, *Dungeon Master* won a raft of accolades and topped 'game of the year' charts in practically every videogame magazine of the time. It went on to become one of the bestselling 16-bit home computer games of all time and achieved an incredible 50% market penetration on the Atari ST alone. The success of the game was not lost on rival developers, and companies such as Westwood Studios (*Eye Of The Beholder, Lands of Lore*), Sega (*Shining and The Darkness*) and Mirrorsoft



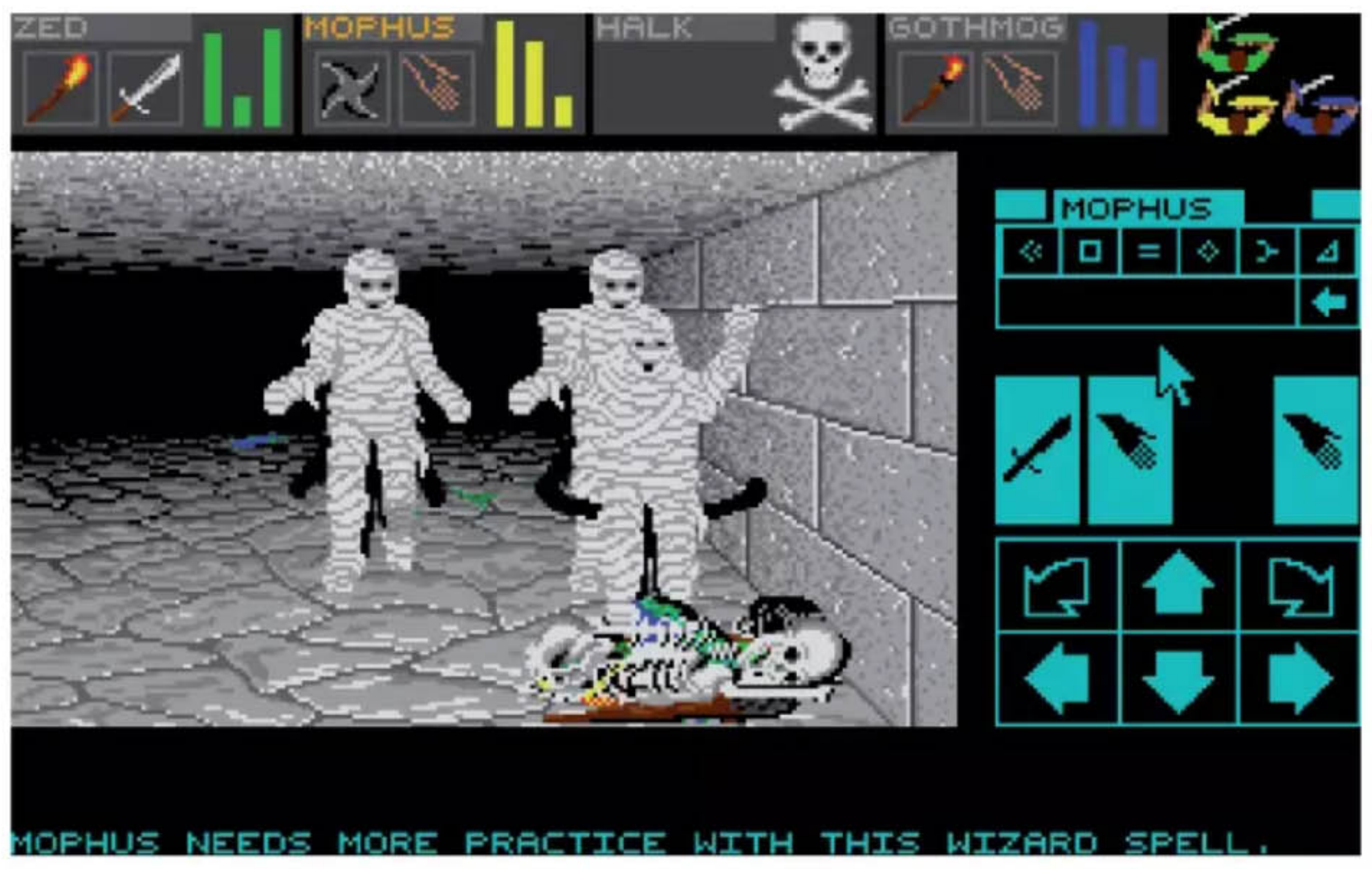
» A Screamer from *Dungeon Master Nexus*.

OTHER VERSIONS

Theron's Quest
This PC Engine conversion is probably one of the most notable ports as it deviated from the original *Dungeon Master* in a number of ways. Subtitled Theron's Quest, it is split into seven small dungeons, each of which contained puzzles and maps from the original home computer versions of *Dungeon Master* and *Chaos Strikes Back*. The most sweeping change is the introduction of an anime intro and storyline – the player assumes the character of a teenage boy proving his worth by defeating an evil force (a plot that should come as no surprise to any hardened JRPG fan). The final product is a very toned-down version of FTL's classic game, but is still worth seeking out.

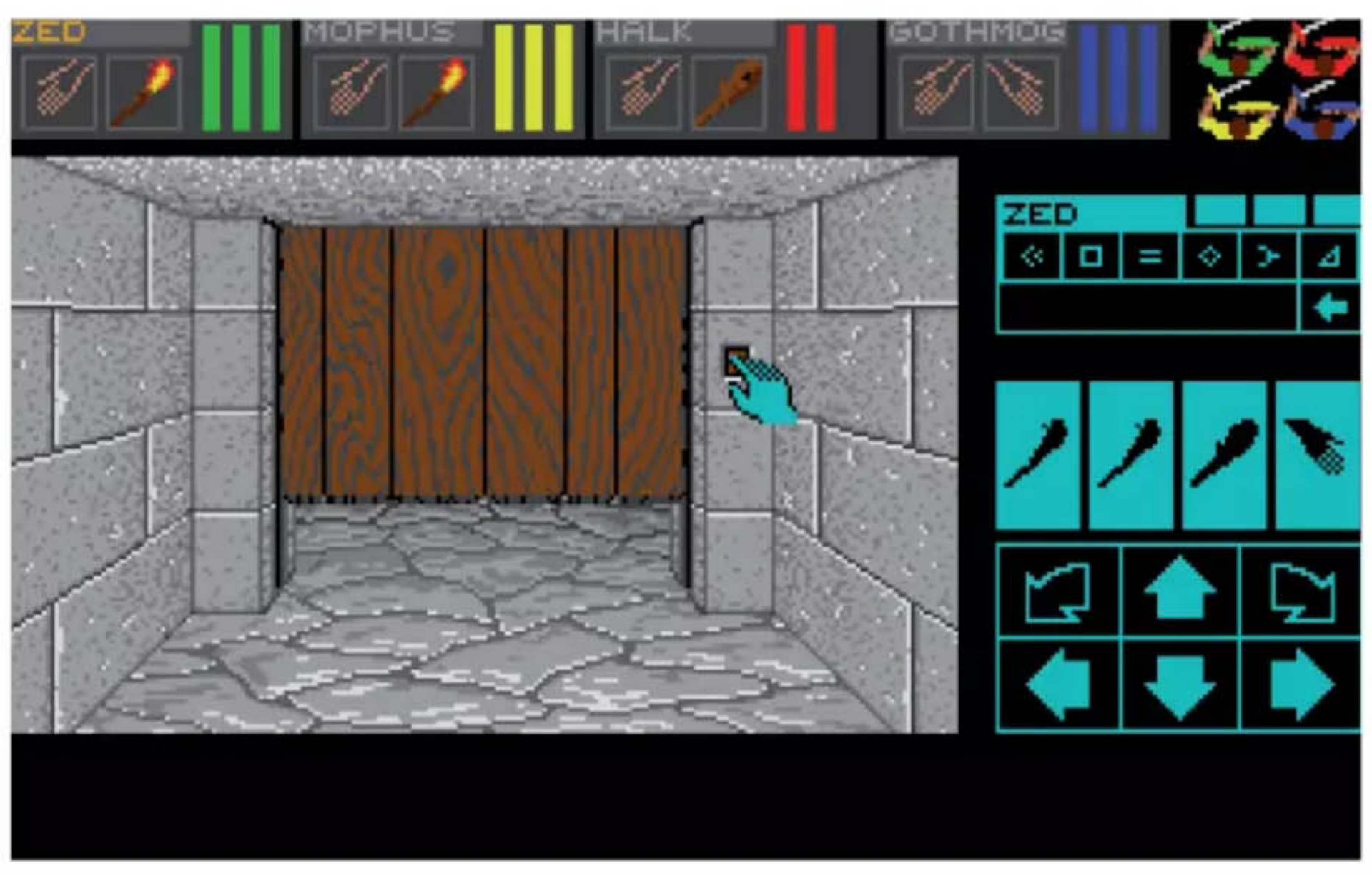
Dungeon Master Nexus
Released in 1998 by Victor Interactive, *Dungeon Master Nexus* is a Japanese exclusive for the Sega Saturn. Developed entirely in Japan (where Dungeon Master has a massive following), the game is an admirable attempt to update the classic formula in 3D, but is hampered by the primitive graphic engine and slow, unresponsive controls. Most of the in-game text is in English and while it's not an especially expensive game, the limited print run means it is extremely hard to find these days.

SUPER
Theron's Quest
Dungeon Master
ダンジョンマスター ネクサス
Dungeon Master
N E X U S
SEGA SATURN
Victor

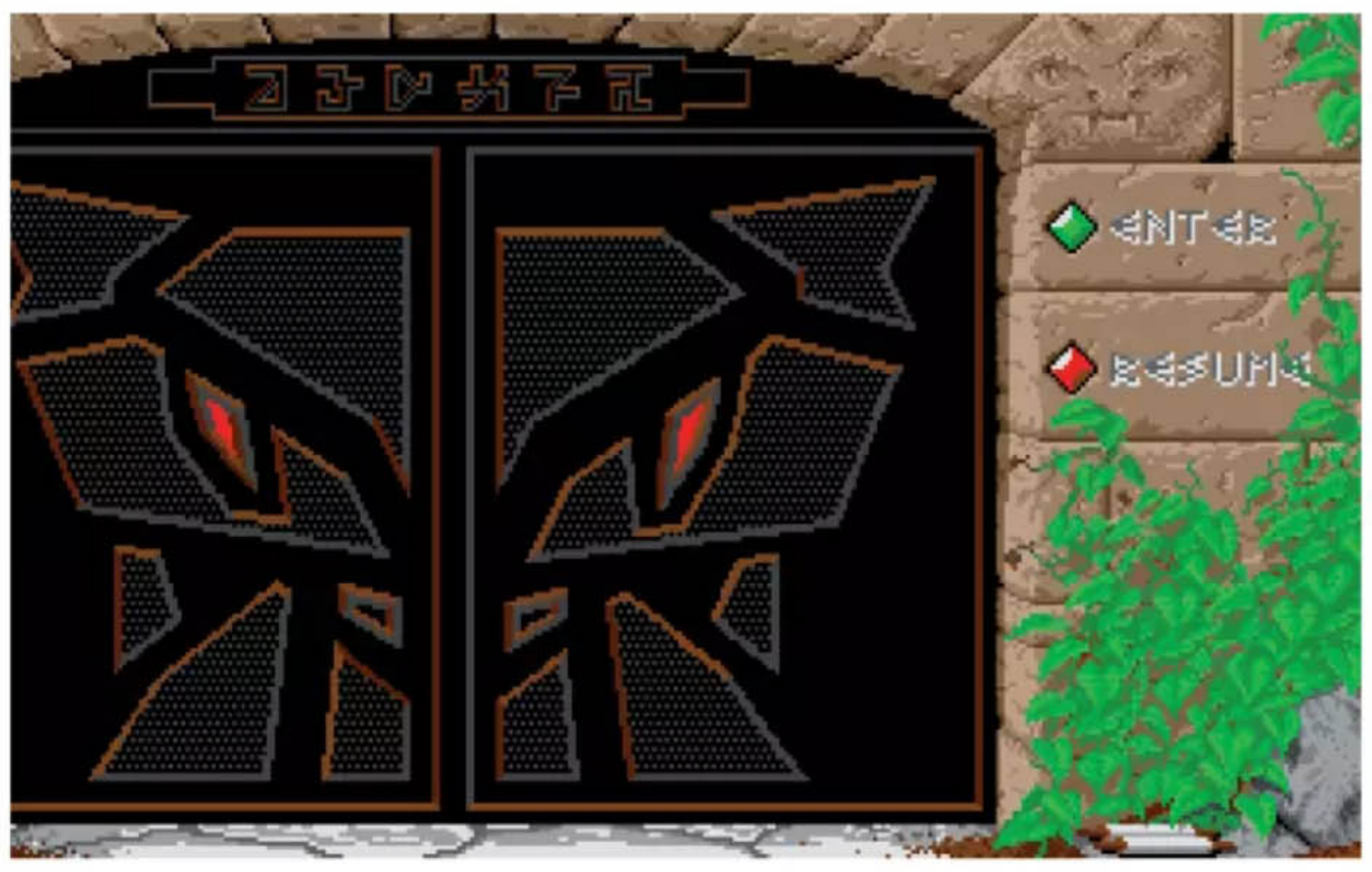


MOPHUS NEEDS MORE PRACTICE WITH THIS WIZARD SPELL.

» That pile of bones is one of your fallen champions.



» Doors can be opened in a variety of ways.



» The entrance to the dungeon – anyone with sense would turn back now…

(*Bloodwych*) tried to emulate the winning formula of FTL's title, with varying degrees of success. *Dungeon Master* was converted to different formats including the Amiga, Sharp X68000, PC, FM Towns, PC-9801 and Super Nintendo. An enhanced version with additional animation and sound was produced for Commodore's ill-fated CDTV, but development stalled (and was eventually cancelled) due to Commodore's failure to provide FTL with reliable information regarding save-game options on the machine.

Expanding out

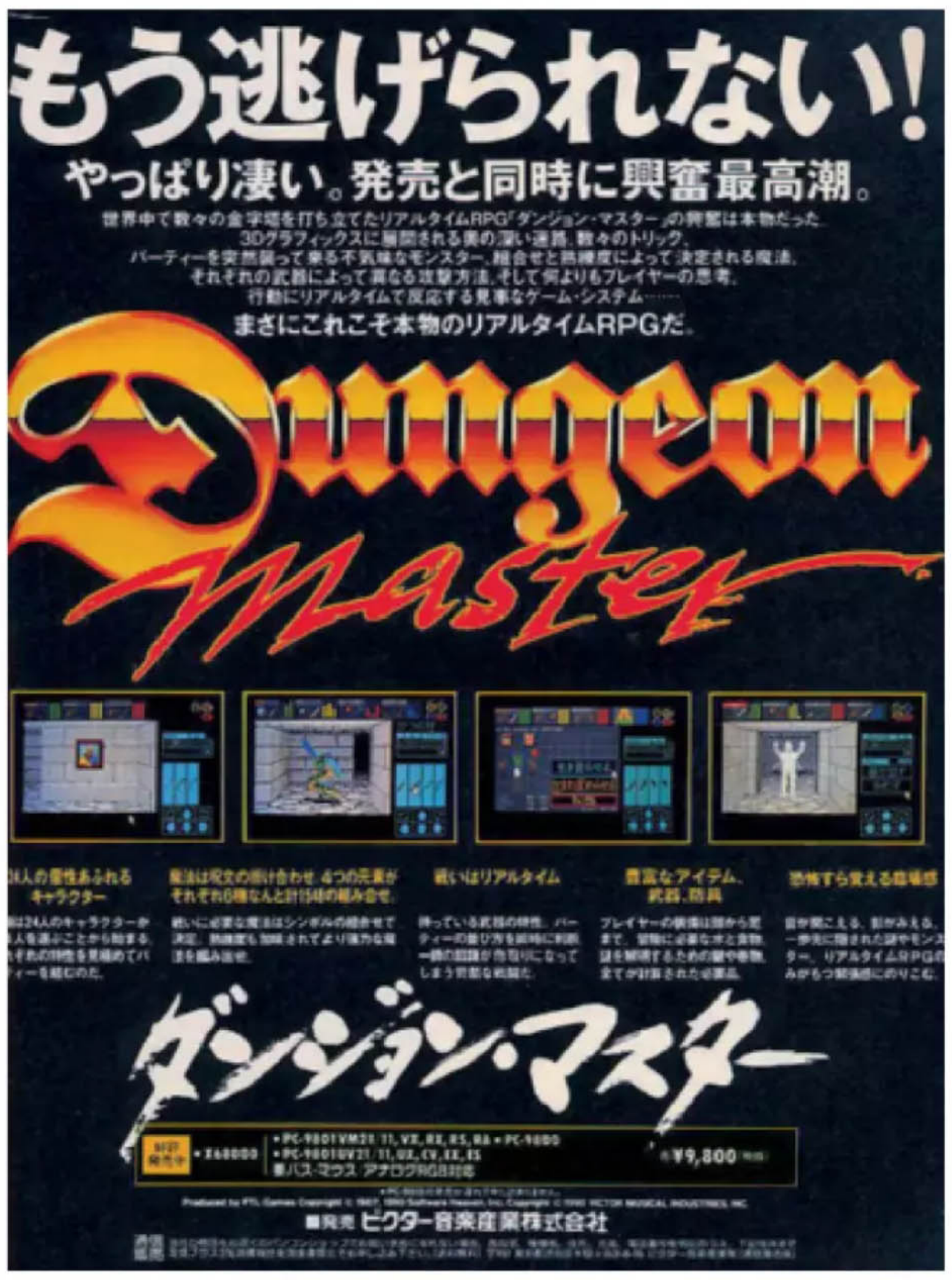
Given the massive success of *Dungeon Master* it was inevitable that FTL would expand on the game in some way. "*Dungeon Master* was developed with the idea of creating many scenarios," continues Bell. The first of these expansions was *Chaos Strikes Back* – however, it bucked the trend of the time by being published as a stand-alone game that did not require the original to run. Although it used the same game engine and many of the same enemy sprites, it proved to be an excellent title and things looked positive for future instalments along the same lines. Sadly, other commitments got in the way, much to Bell's chagrin. "One of my regrets is that we got so busy doing ports of the game that we didn't end up creating enough scenarios," he comments.

Chaos Strikes Back was a hit when it was first published in 1989 and satisfied the hardcore *Dungeon Master* fans, but what everyone really craved was a full-blown sequel. The wait was to be an excruciatingly protracted one. *Dungeon Master II: The Legend Of Skullkeep* had an extremely lengthy development period and by the time it was eventually released in 1995 the goalposts had not so much been moved, but rather uprooted completely. The game retained the familiar 2D visual style of the original *Dungeon Master*, with the addition of outdoor locations and a more complex game engine. It was an excellent game, but lacked the visual polish to tempt people away from newer adventures.

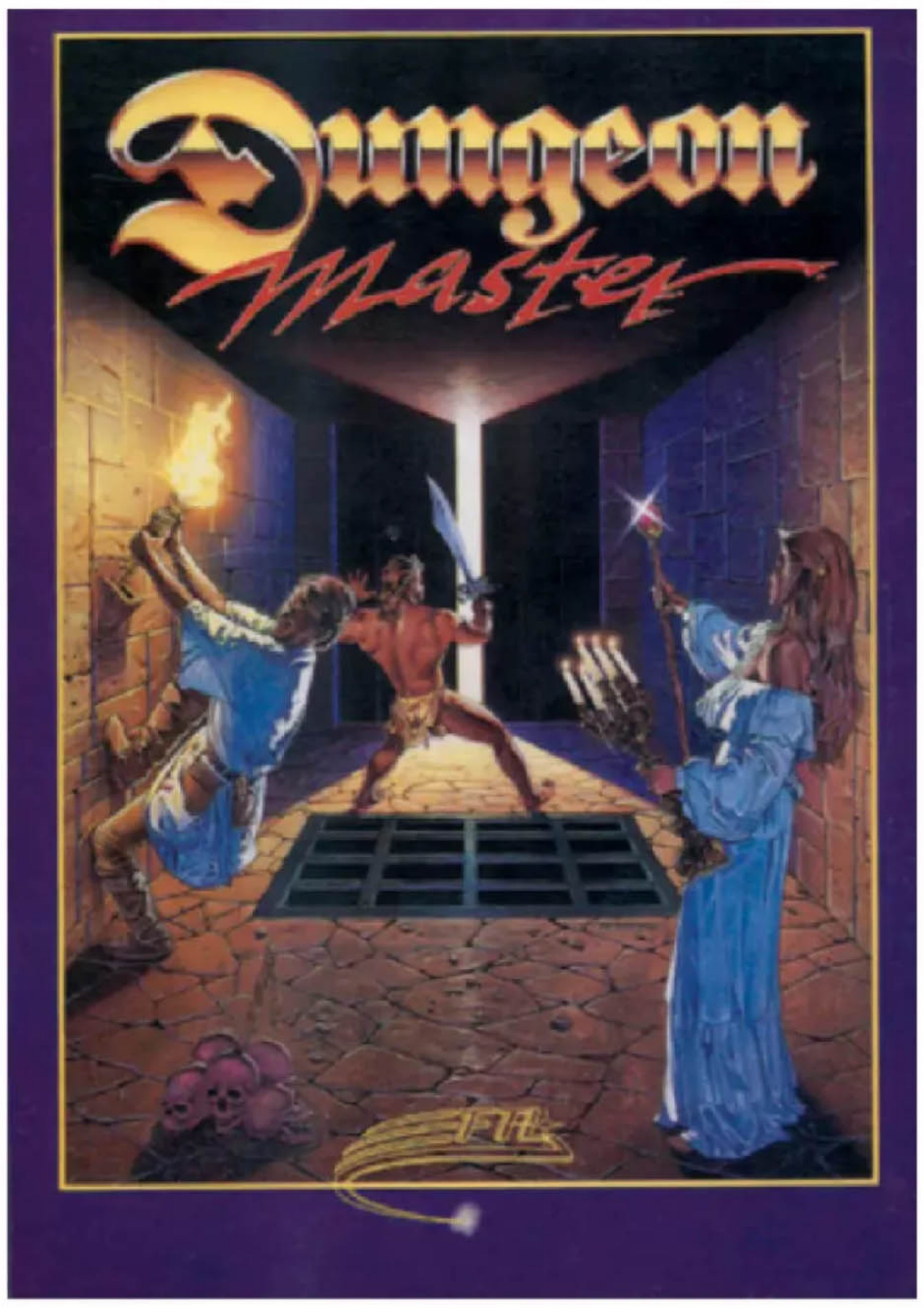
Although the sequel did sell extremely well and garnered some positive review scores, it was something of a letdown after the groundbreaking original. It would also prove to be FTL's final roll of the dice and the company ceased operations in 1996. Bell remained with them right up to the bitter end. He has since left the games industry in favour of a career that is more suited to his current lifestyle. "I'm currently a software architect for a company that develops software for the auto insurance claims industry," he explains. "It's quite boring compared to the game industry, but it also consumes far less of my time. I have two sons, nine and 12, and I spend a great deal of time with them… something I'm not sure was possible in the games industry".

> "DUNGEON MASTER WAS DEVELOPED WITH THE IDEA OF CREATING MANY SCENARIOS"
>
> DOUG BELL

Special thanks to Christophe Fontanel of the Dungeon Master Encyclopedia (http://dmweb.free.fr) for allowing the reproduction of several scans and the Dungeon Master Nexus screenshots.


もう逃げられない!
やっぱり凄い。発売と同時に興奮最高潮。
まさにこれこそ本物のリアルタイムRPGだ。
Dungeon Master
ダンジョン・マスター

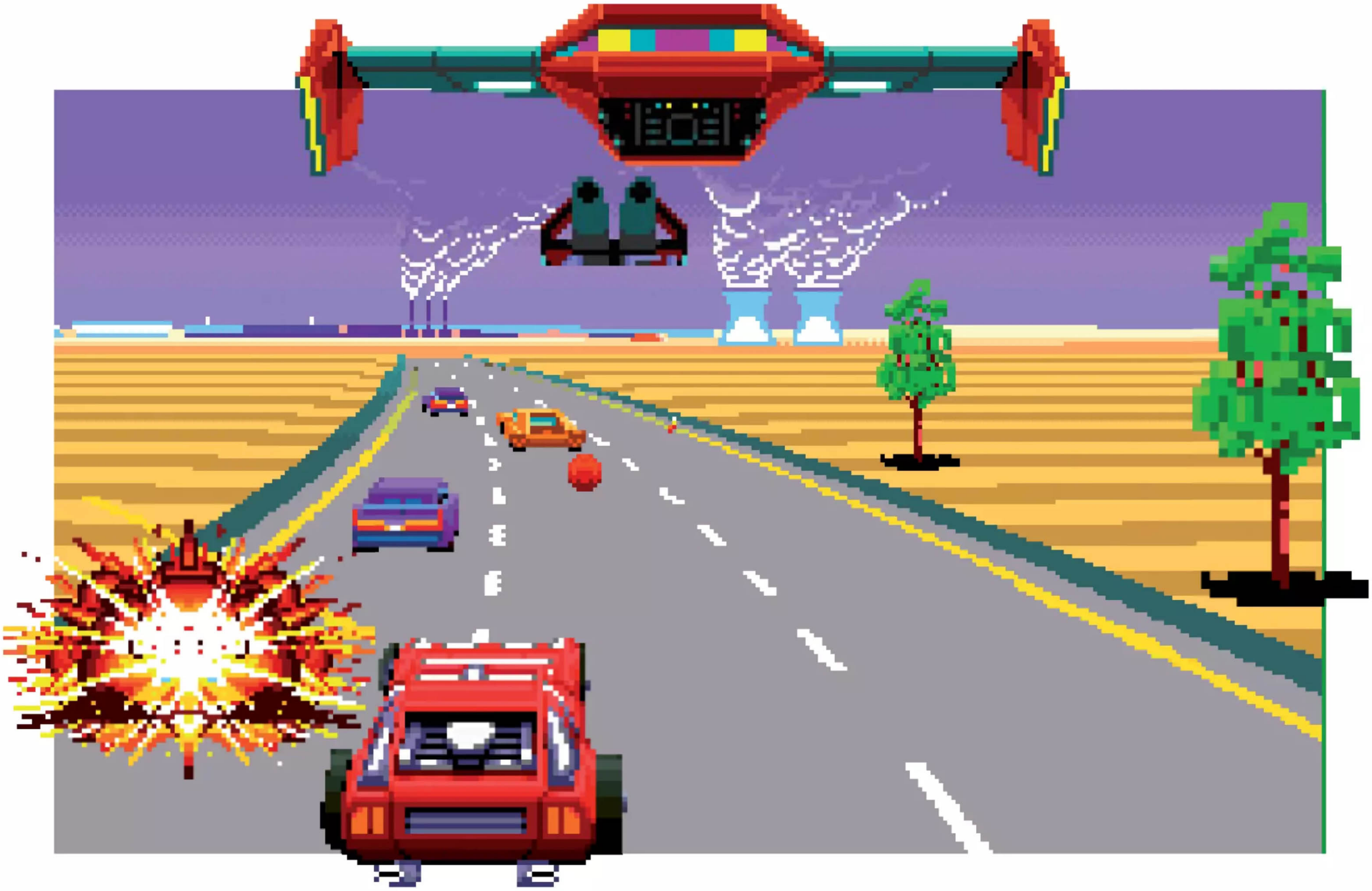
» Japanese advert for *Dungeon Master.*

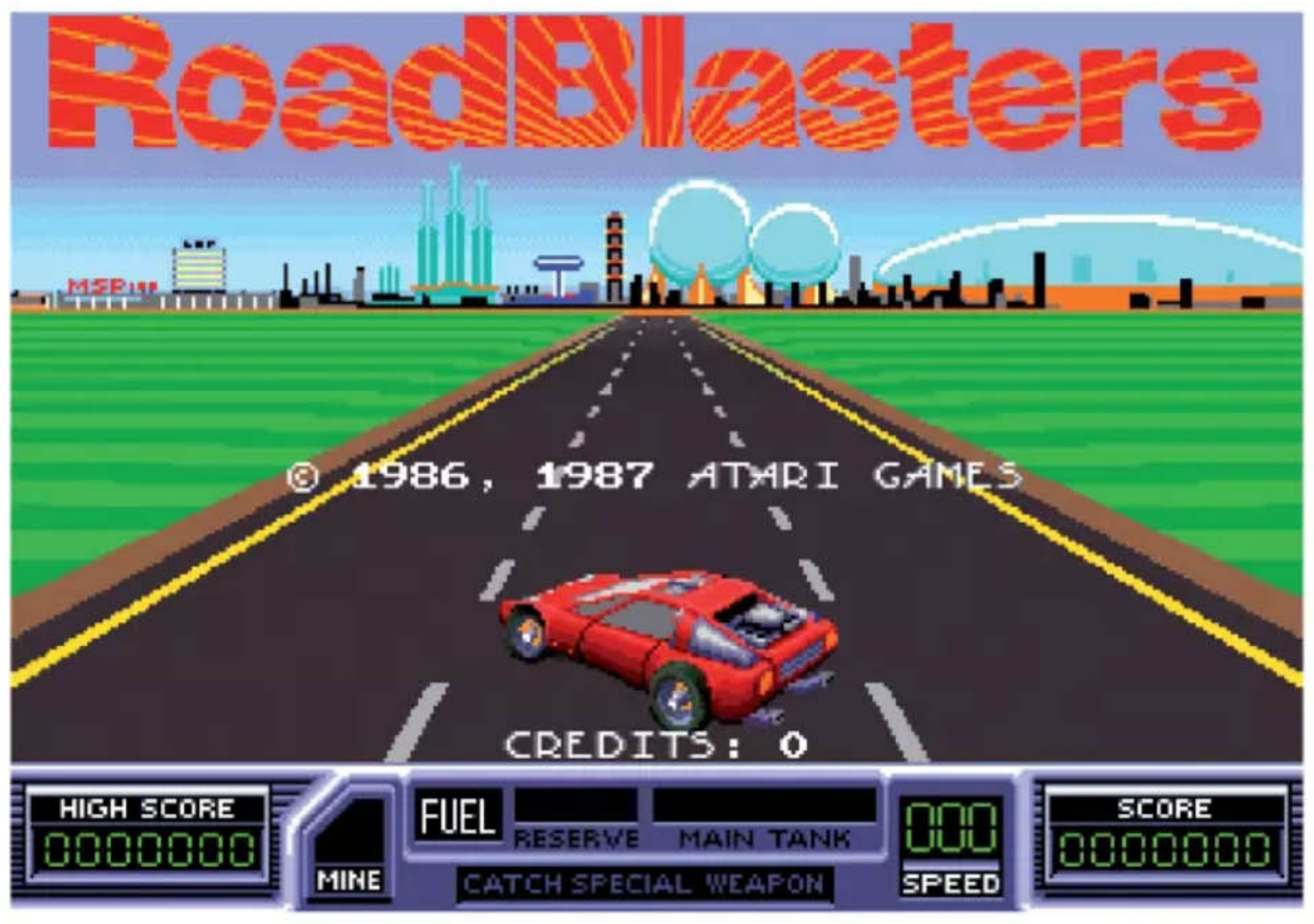


» David R Darrow produced the stunning covers for *Dungeon Master* and *Chaos Strikes Back.*

THE MAKING OF ROAD BLASTERS

AN ATARI GAME THAT MADE MAD MAX LOOK LIKE A SUNDAY MORNING DRIVE, ROADBLASTERS SKILFULLY MERGED RACING AND SHOOTING ACTION. EX-ATARI DEVELOPMENT TEAM MARK STEPHEN PIERCE, BONNIE SMITHSON AND ROBERT WEATHERBY LINE UP ON THE STARTING GRID

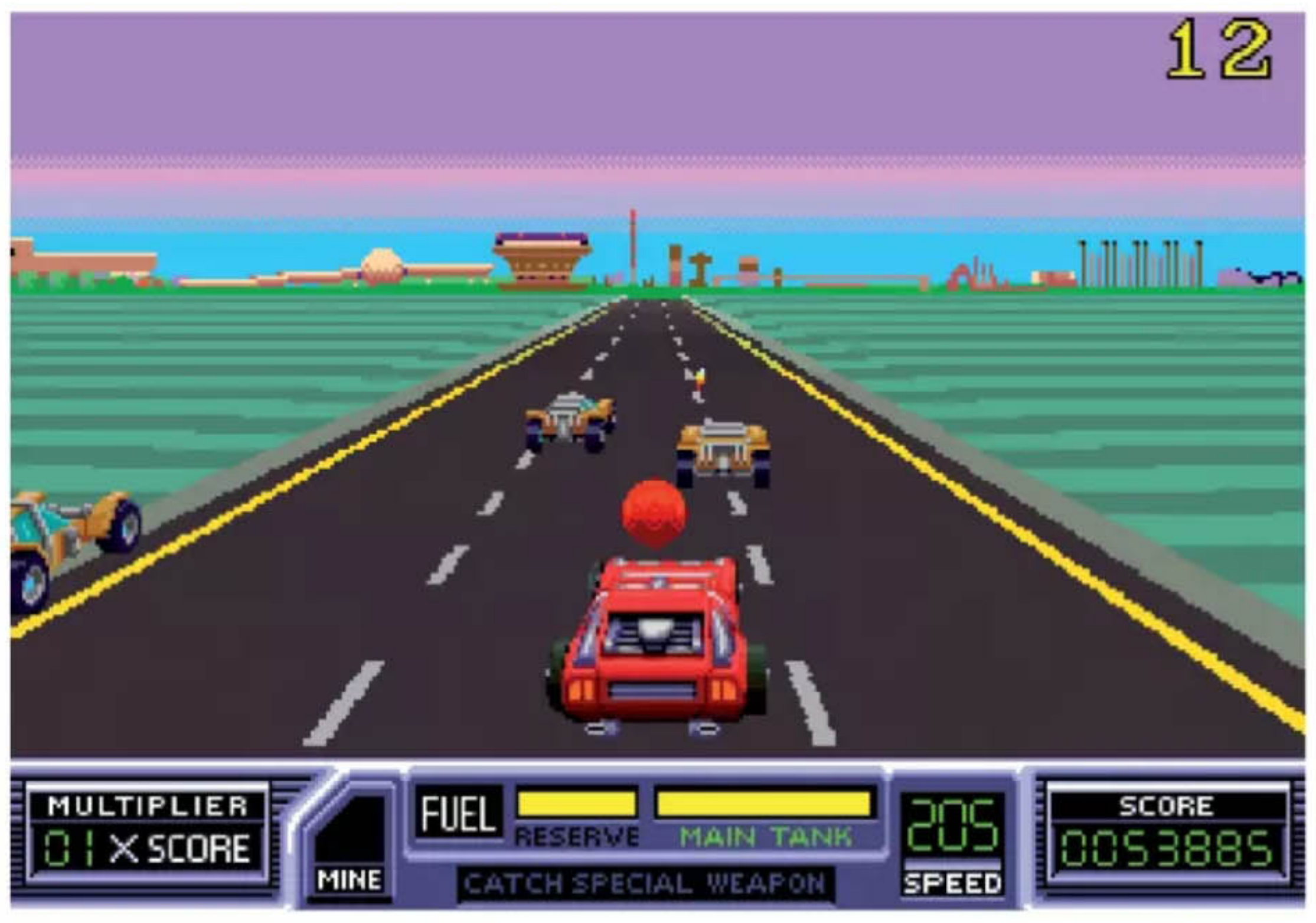


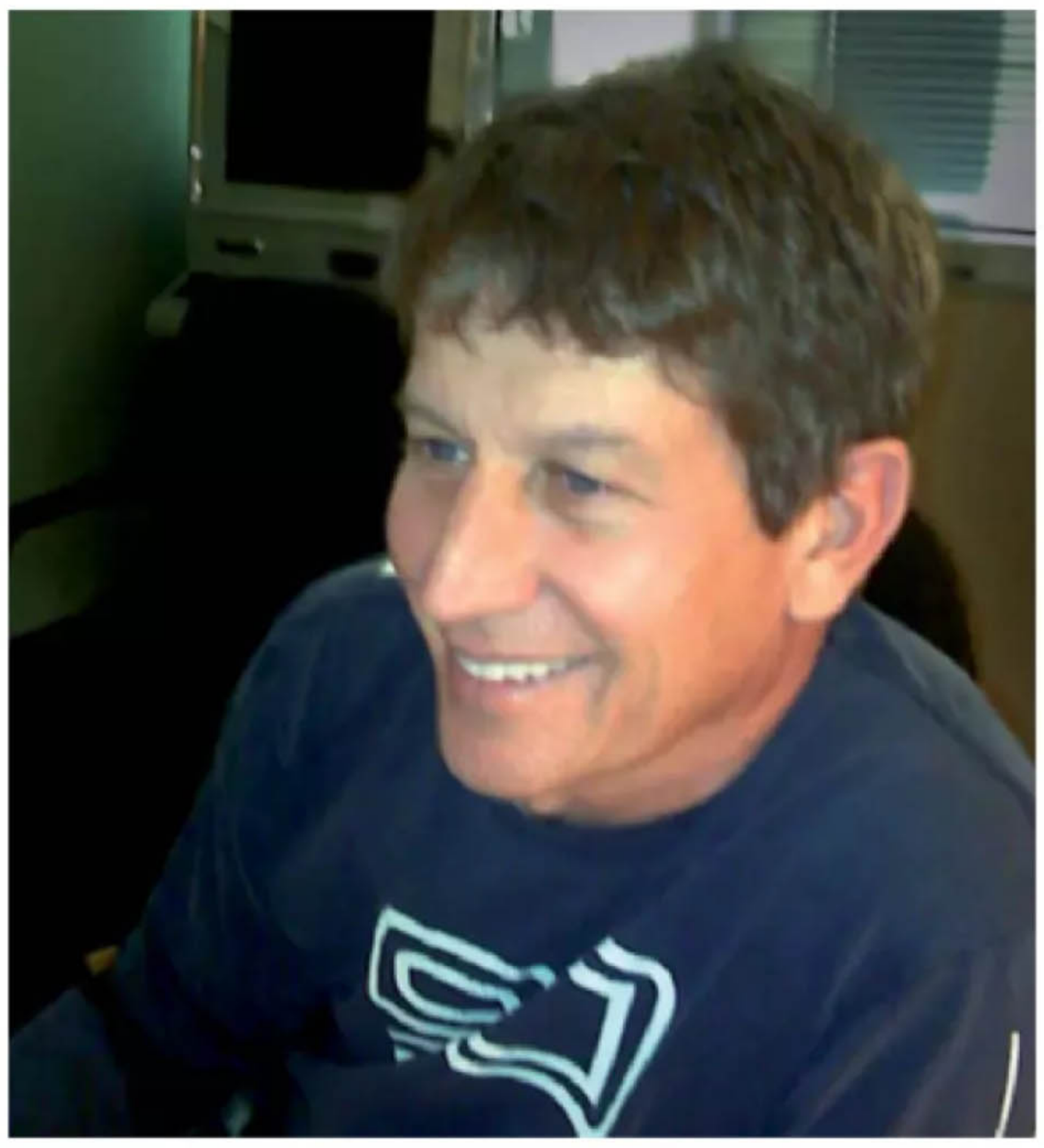


IN THE KNOW

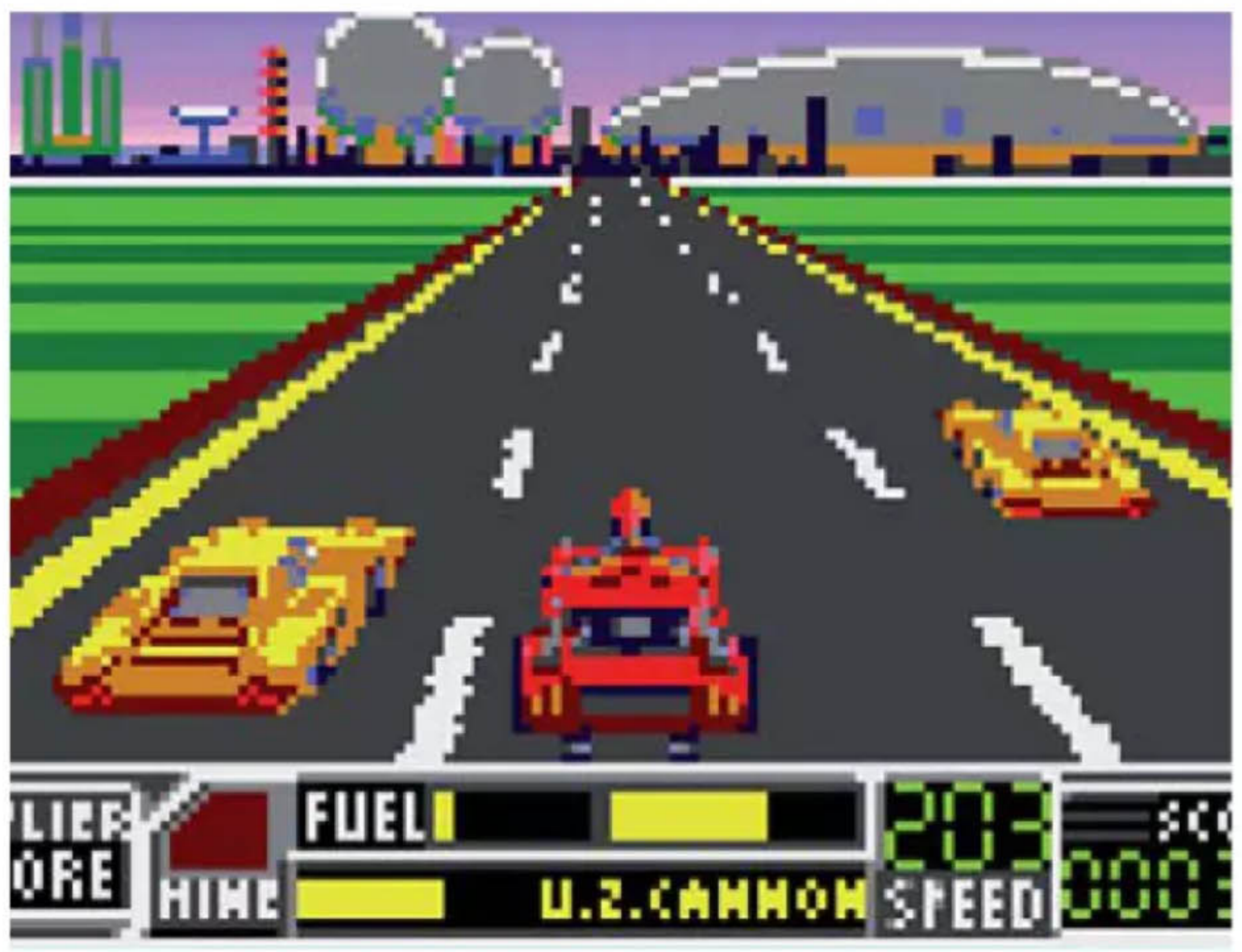
ROAD BLASTERS

- **Publisher:** Atari Games
- **Developer:** In-House
- **Platform:** Arcade
- **Year released:** 1987
- **Genre:** Racing/Shoot-'em-up
- **Expect to pay:** £400+ ($900+)

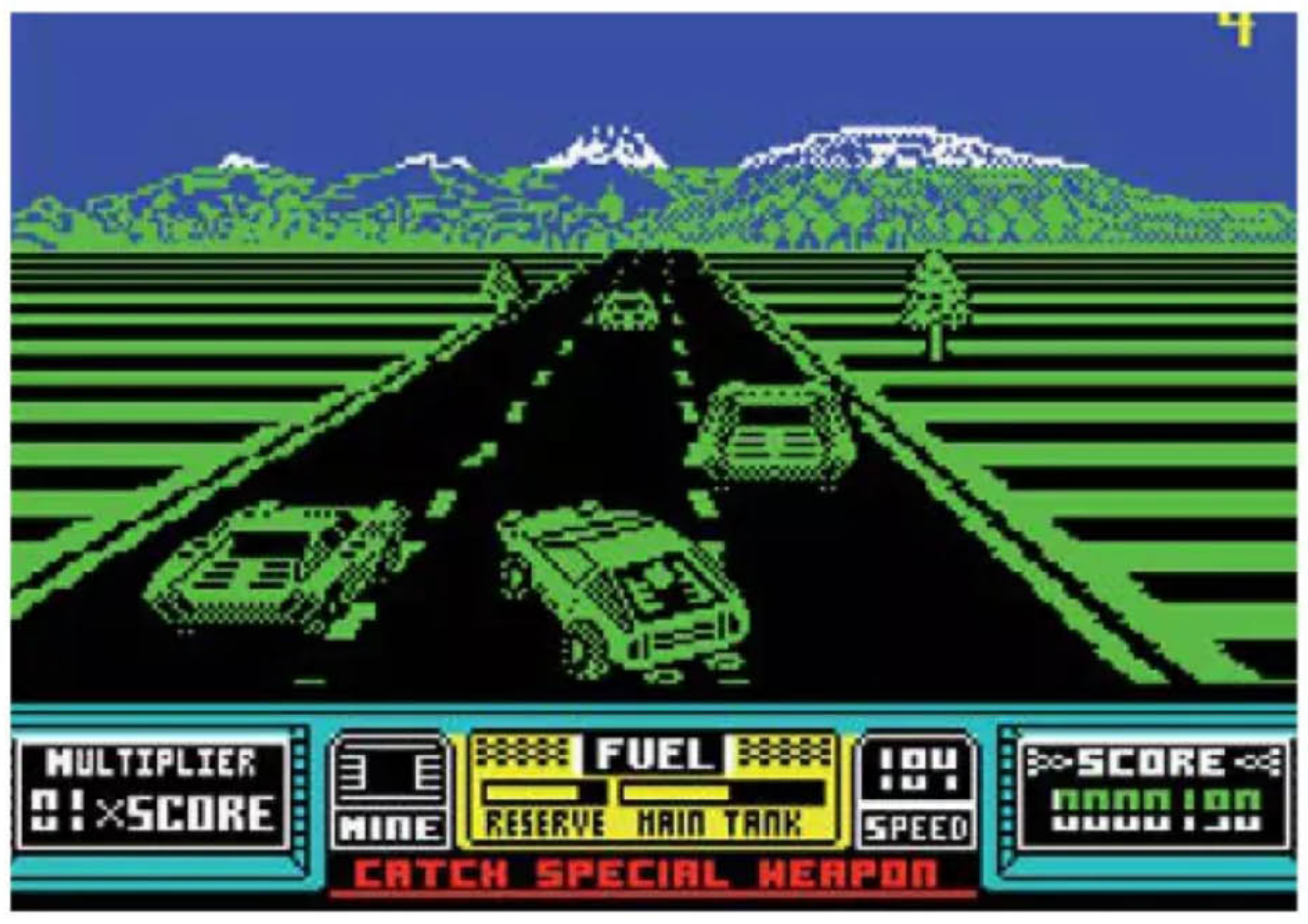




» Robert Weatherby has worked on many more coin-ops for Atari, including 1995's *Area 51*, which was a fun shooter.



» Atari's Lynx conversion retained much of the coin-op's speed and is much more forgiving that the original.



» The Spectrum 128k conversion of *RoadBlasters* is one of the better efforts and is certainly worth playing.

“The game was originally called FutureVette, like a Corvette… but from the future,” says Mark Pierce, who pauses before adding: “I thought it was a hideous name.” Mark is one of three key team members we tracked down who worked on Atari's classic 1987 game, which deftly merged shooting and racing action, and which was eventually renamed *RoadBlasters*. He's trying to remember the game's origins, which escape programmers Bonnie Smithson – the first of the team on the project – and Robert Weatherby. Mark recalls that the game was Lyle Rains' 'baby', and the design document was, thankfully, better than the game's name: “It was one sheet of paper. 'FutureVette' was at the top, and there was a paragraph of text that pretty much said: 'You can drive real fast and shoot!' The vision was a mash-up of *Pole Position* and *Spy Hunter*, which was popular then.”

Training wheels

As noted, Bonnie was first on the project. A recent Atari hire and new to gaming, she recalls being given tasks to get the hang of how game software was structured. “For this one, I was asked to program a graphics board to change the line offsets on hblank to shape a roadway,” she says. Armed with a *Pole Position* cabinet for reference and Atari's System 1 hardware, Bonnie got a basic racing road up and running fairly quickly. “Pole Position had hardware to make the road move, but my experiment showed that it was possible to create the same effect with less custom hardware.”

“THE DESIGN DOCUMENT PRETTY MUCH SAID: 'YOU CAN DRIVE REAL FAST AND SHOOT!'”
MARK S PIERCE

Mark recalls that this was essentially the game that existed when he joined the project: “Bonnie was rebuilding Pole Position's technology, and she'd created a road and the horizon that moved left and right. I think there was also a car sitting pinned that would turn a bit – all very rudimentary.”

But with Mark and Bonnie working together, along with occasional input from other Atari staff, things rapidly evolved. “After we had the first-person view of the car, we added traffic, collisions, shooting, adversaries, points and scoring, and started working up levels,” says Bonnie. “There were continual rounds of refinement, and so a typical day would include me composing new functionality and incorporating gameplay feedback and graphical refinements, and I'd add nuances to simple implementations that were placeholders.”

Production of the game was an iterative process, and Bonnie was keen to make things 'tuneable' in real-time. “I exposed nearly every value in the game to something I could tweak while others were playing, and so if they complained about something I could immediately change it to see if they thought the game improved. I love real-time programming, and so I liked the timing constraints of the hardware. It was a challenge to slice up the processing so it could be done in time to make the game feel good. I learned what trade-off a gameplay designer wanted access to very quickly and gave it to them.”

After several months, the team had a solid game where you raced against a timer, frantically blasting everything in your path as you did so. During testing, Lyle Rains deemed that feedback wasn't strong enough and so Robert Weatherby, fresh from *Championship Sprint*, was asked to join the project, to inject fresh ideas and assist with programming.

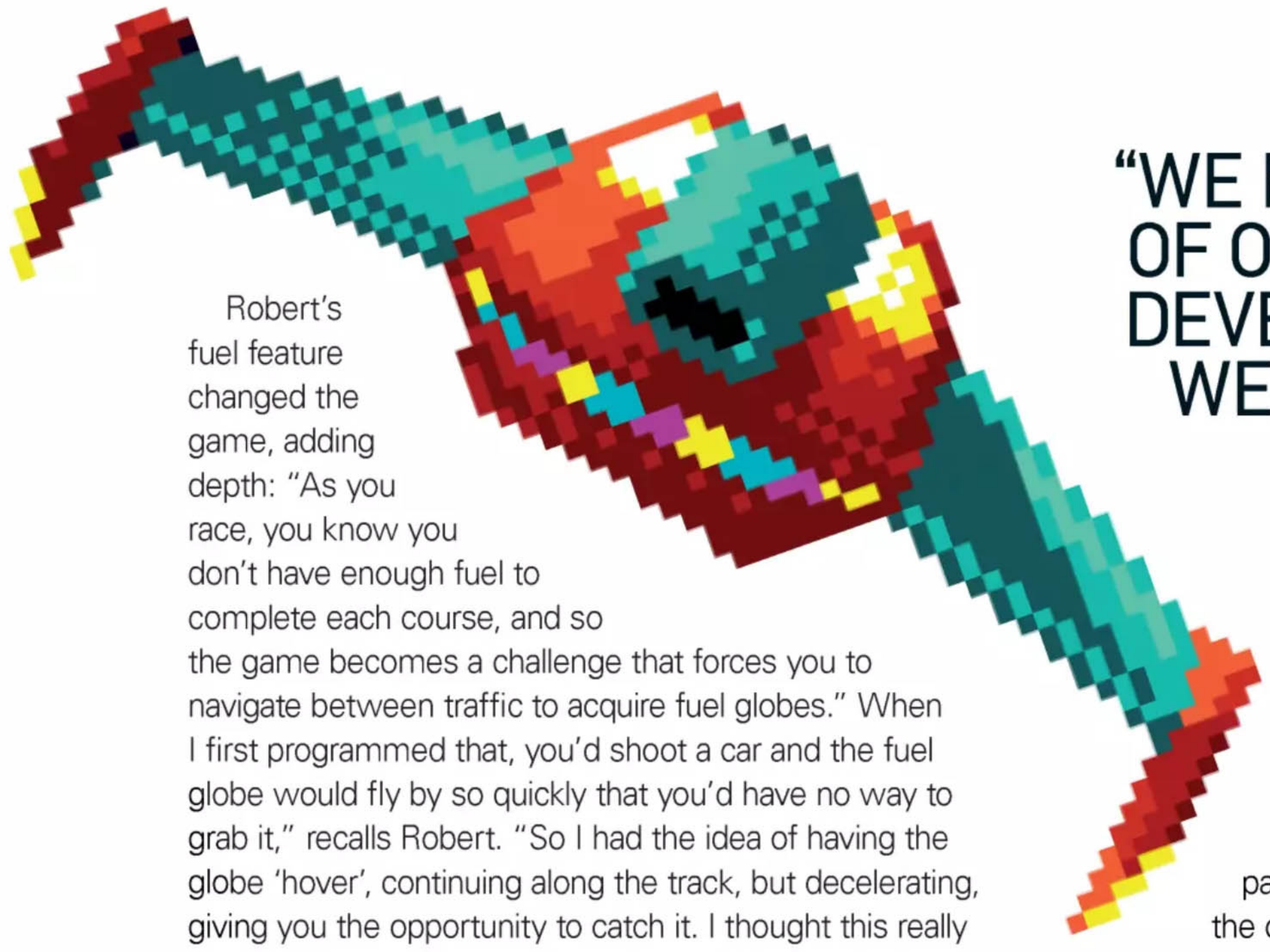
On playing the game, Robert found it too easy to blow up other road users: “You could lay on the trigger and everything would get destroyed – there weren't any real hazards – so we armoured some cars, which meant you had traffic to contend with.”

Having designed *Super Sprint's* car attribute power-ups, Robert decided that he wanted to have something similar for *RoadBlasters*, and so extra weapons were added to the mix in order to make the new game more fun. “One of these came from a development mode I'd created, where collisions were disabled, enabling us to drive through other cars,” says Bonnie. “As Mark and I were playing, we decided to make this a weapon option, which became the electro shield.”

“And I think I was the one to suggest replacing *Spy Hunter's* van with a plane that swoops in with your weapon,” adds Mark. “It looks terrible today, but back in the day it was 'Wow!'”

Time waits for no one

The biggest change that Robert instigated, though, was ditching a timer – something he'd also done in Super Sprint. But the team wasn't convinced. “I didn't want to race against a clock – I wanted something more dynamic that acted like a clock, so I threw out there the idea of adding fuel strategically, and you acquiring it in order to finish a stage,” remembers Robert. “People were lukewarm to the idea, but I was stubborn, said to give me a couple of weeks to show everyone what I was talking about, and went ahead and programmed it anyway.”



Robert's fuel feature changed the game, adding depth: "As you race, you know you don't have enough fuel to complete each course, and so the game becomes a challenge that forces you to navigate between traffic to acquire fuel globes." When I first programmed that, you'd shoot a car and the fuel globe would fly by so quickly that you'd have no way to grab it," recalls Robert. "So I had the idea of having the globe 'hover', continuing along the track, but decelerating, giving you the opportunity to catch it. I thought this really made the game fun – you're racing at high speed, shoot a car ahead of you, and have to squeeze between cars to grab the fuel you need to survive."

Adding the extras

Some would have seen Robert's abrupt input as an intrusion, but Mark welcomed it: "Robert's a real good guy. A lot of people call themselves games designers, but I don't buy into that – they edit levels. But Robert understands how a game's got to have a hook, how to tune something, how to make an experience successful for a broad base. He, Dave [Wiebenson], Bonnie and I worked together to improve the game's design and we were a great team."

More features were slowly added to the game. "I contributed the idea of dune buggies that sped ahead of you and slammed on the brakes, Robert added 'fish tailing' and other aspects of car handling, and Brad Fuller added fantastic sound work that added immeasurably to the game," says Bonnie. "I also worked hard on adversary intelligence – programming I'm still proud of. Others on the team described what they wanted and it was my job to translate subjective terms of game 'feel' into code."

Mark's keen to point out Dave Wiebenson's contribution during this period of development. Beforehand, Dave had largely been a technician – the guy who'd build prototypes, go on field tests, and ensure that cabinets would work properly. But with *RoadBlasters*, he became heavily involved in laying out tracks. "Much of the success of the game was down to how Dave edited the levels," claims Mark. "He'd sit and edit text files that were pages and pages long, and he'd compare the code with the on-screen experience. Everyone at Atari was playing games in the lab, so Lyle would be there and I'd be playing all the time. We'd all be providing feedback – 'This turn's too easy, that one's too hard, this one works really well' – and Dave would be comparing the code to what was happening in the game."

> "WE BECAME AWARE OF OUTRUN DURING DEVELOPMENT AND WERE SALIVATING ABOUT ITS HARDWARE"
>
> MARK S PIERCE

Particularly instrumental in ensuring *RoadBlasters*' longevity, according to Mark, was the placement of fuel globes: "When the fuel globes came in, that kind of tied everything together, and Dave would watch how people played and then reposition the globes accordingly." Over time, testers would find they'd run out of fuel with a globe hovering tantalisingly just out of reach. "They'd then 'coin up' again, because they'd think, 'If I'd only done this one thing differently, I'd have made it'," says Mark. "Dave's work on this area of the game was simply genius. To my knowledge, *RoadBlasters* was the only game that he worked on the software for. I think Atari gave him a design credit, and up until that point artists were artists and technicians were technicians, and so the fact that bridge was crossed was also kind of unique."

RoadBlasters also stood out due to its exciting visuals, which were mostly designed by Mark. He utilised Atari's then-cutting-edge 3D system to kick-start object design, rather than hand-drawing everything. "The system was the one used for *I, Robot*, modified so I could model a car," he explains. "The process was tedious back then, but we built a program that would take my model, rotate it, take a snapshot and make a bitmap." The end result was noisy, messy and lacked textures, but Mark notes that when the images were retouched the end results were better than other games of the time.

However, the *RoadBlasters* project faced huge technological limitations, which enabled a rival

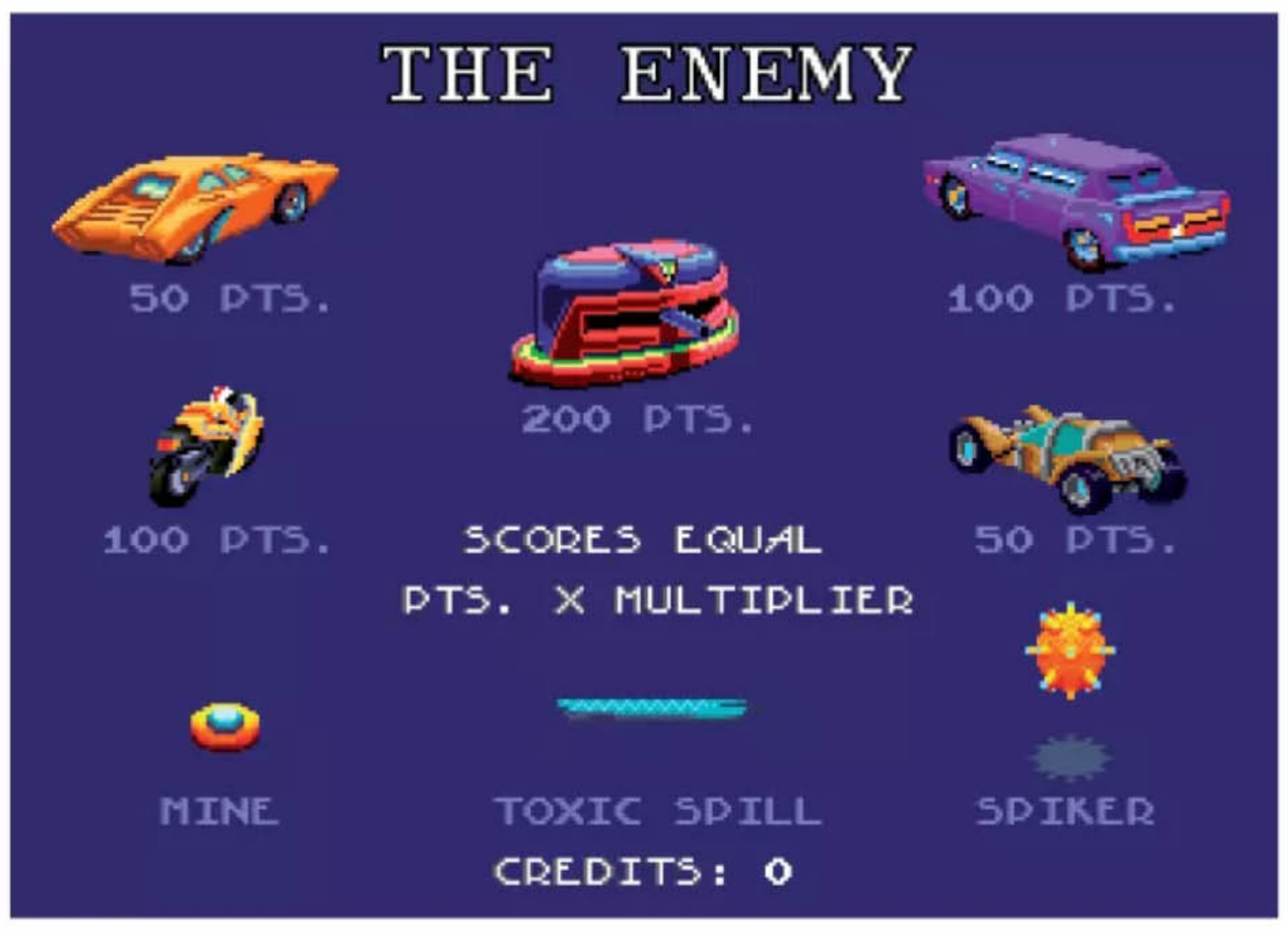
DEVELOPER HIGHLIGHTS

Super Sprint (PICTURED)
System: Arcade
Year: 1986

Klax
System: Arcade
Year: 1989

Road Riot 4WD
System: Arcade
Year: 1991

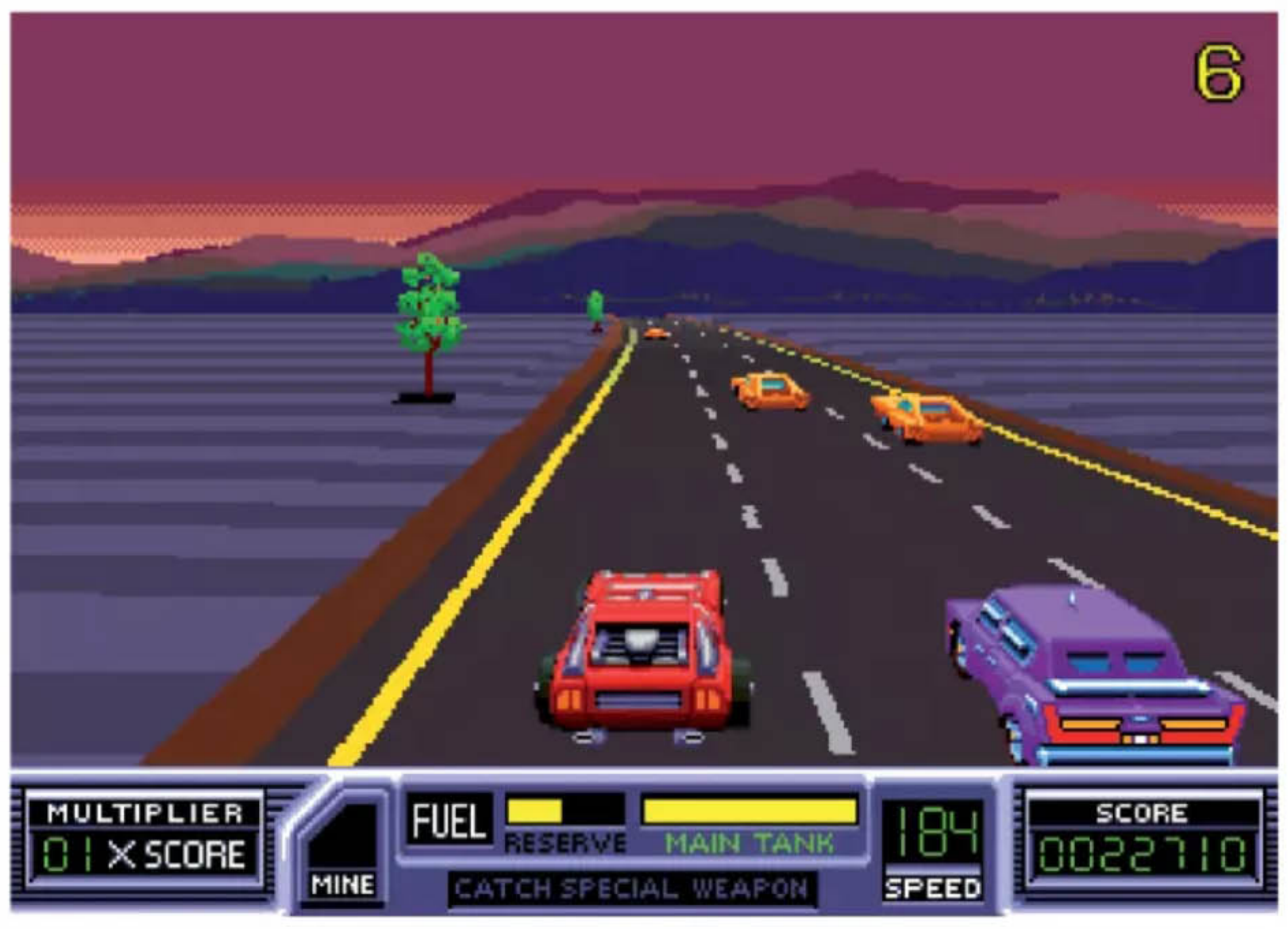
SUPER SPRINT

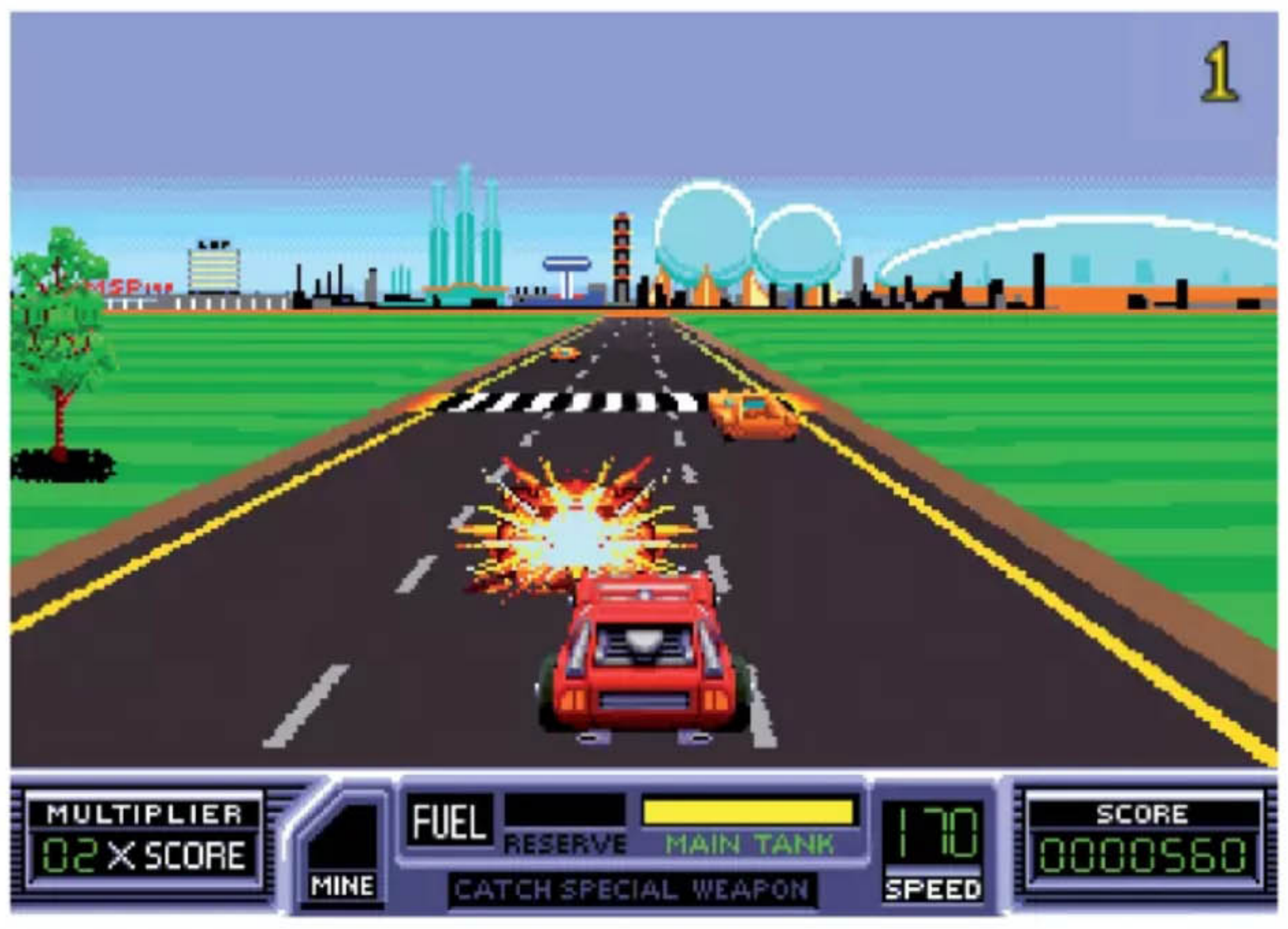


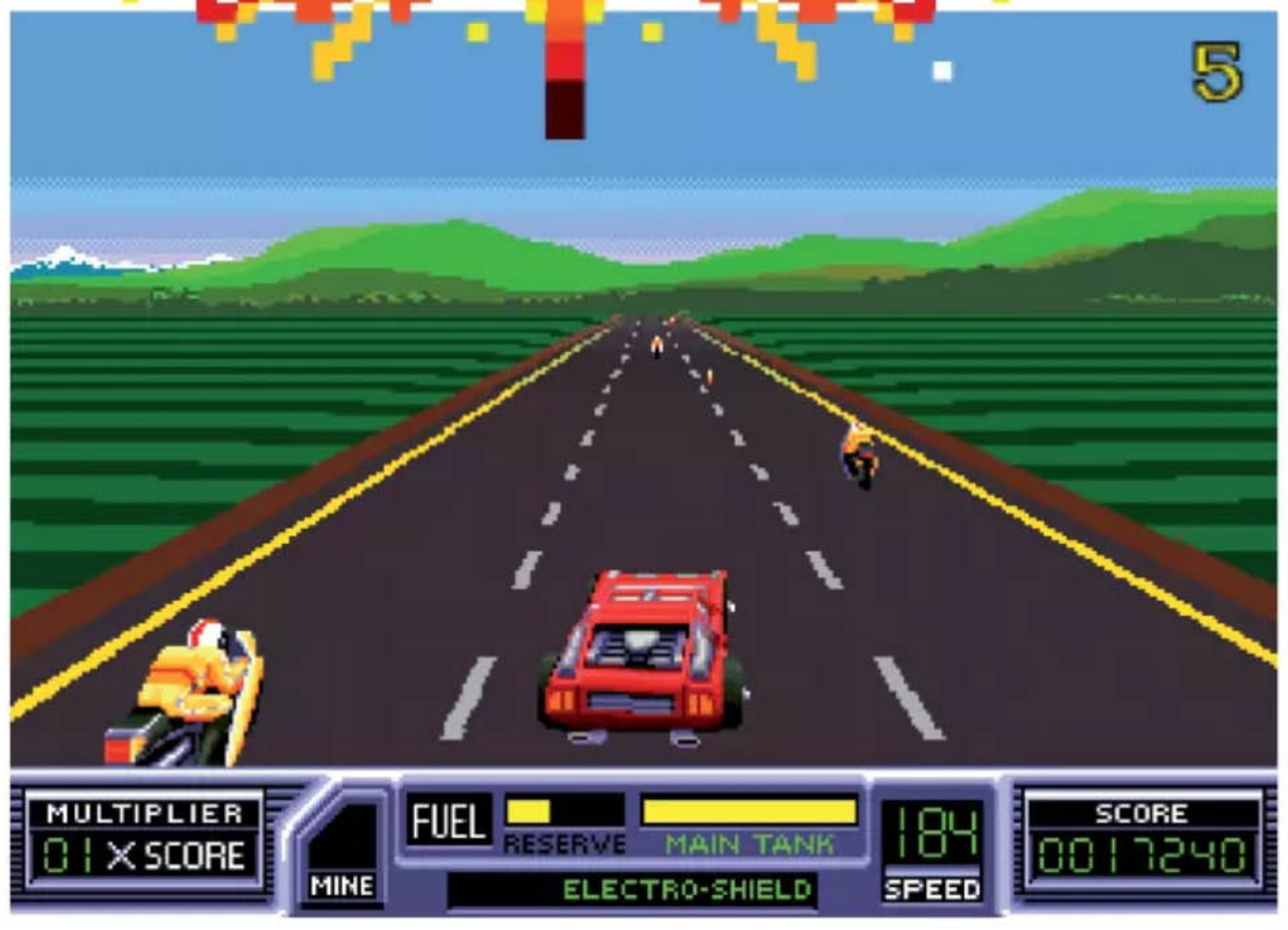
THE ENEMY

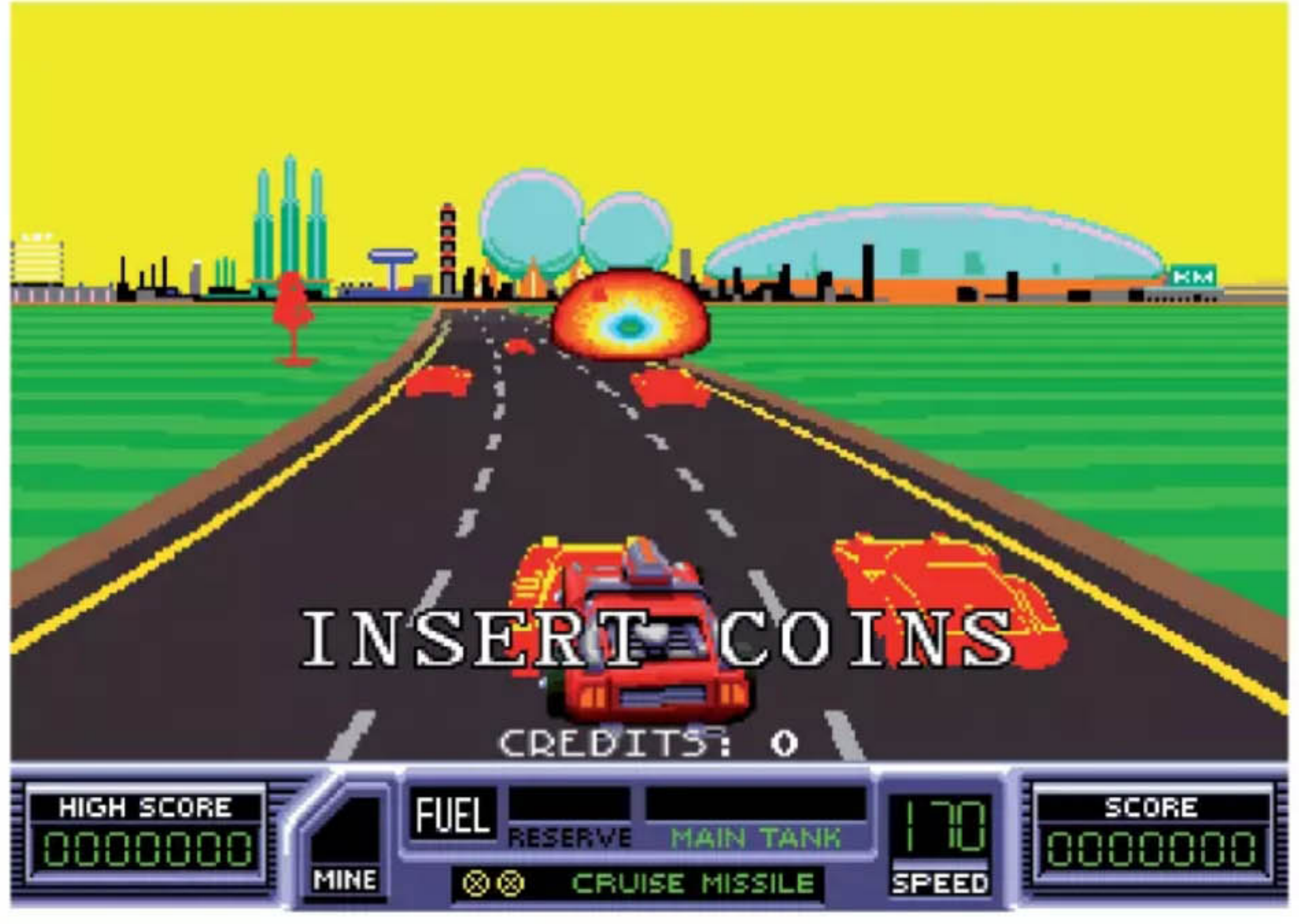
50 PTS.	200 PTS.	100 PTS.
100 PTS.	SCORES EQUAL PTS. X MULTIPLIER	50 PTS.
MINE	TOXIC SPILL	SPIKER

CREDITS: 0





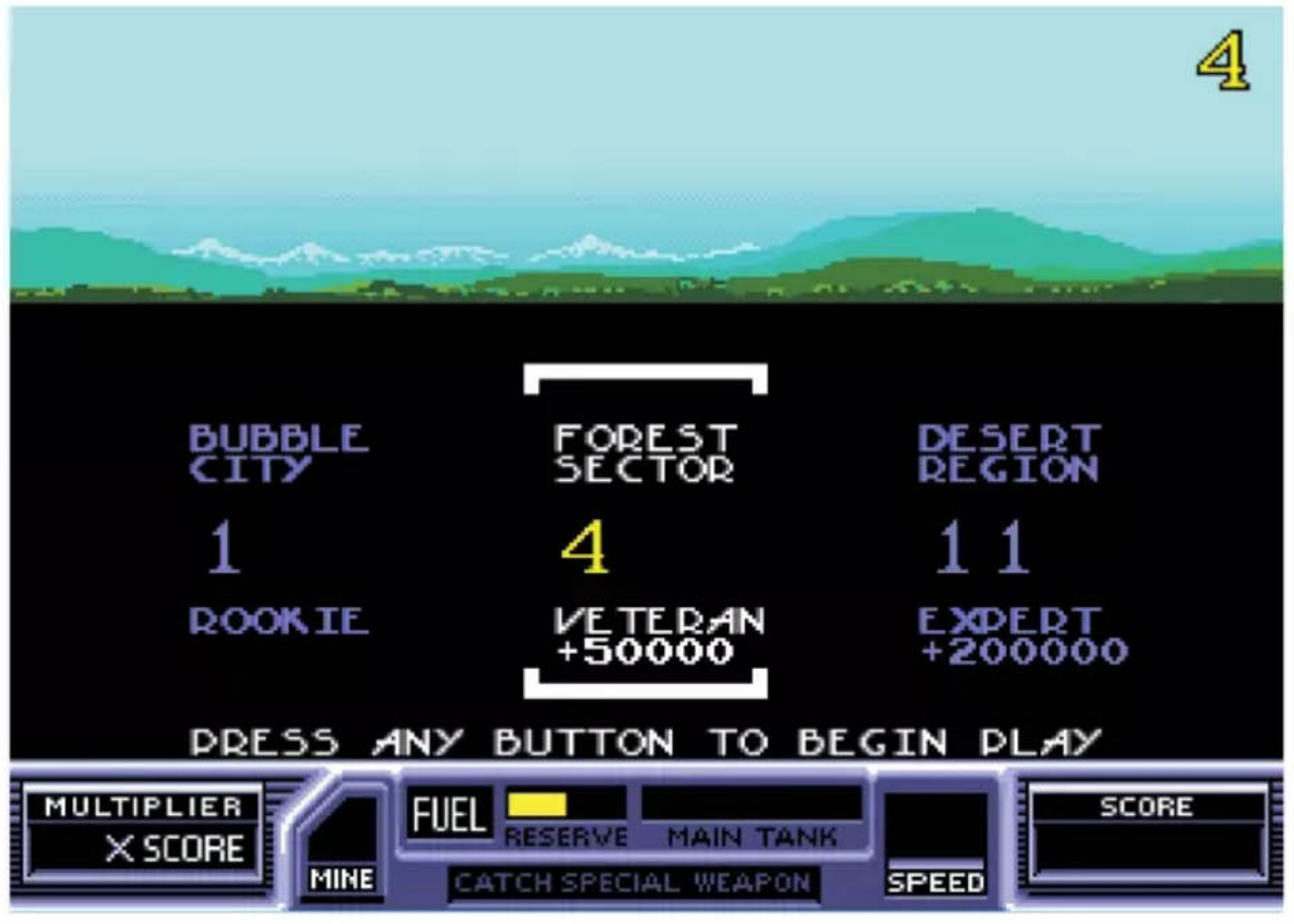



INSERT COINS
CREDITS: 0
HIGH SCORE
0000000
FUEL
RESERVE
MAIN TANK
170
SPEED
SCORE
0000000
MINE
CRUISE MISSILE

» One way to beat the morning rush hour: remove fellow road users by using tactical nuclear weaponry.

RoadBlasters
each sold separately
MATCHBOX

» Watch the entire cringeworthy *RoadBlasters* toy advert at **www.youtube.com/watch?v=4FabrJwPcDA** and understand why the line flopped.


4
BUBBLE CITY
1
ROOKIE
FOREST SECTOR
4
VETERAN +50000
DESERT REGION
11
EXPERT +200000
MULTIPLIER
X SCORE
FUEL
RESERVE
MAIN TANK
MINE
CATCH SPECIAL WEAPON
SPEED
SCORE

PRESS ANY BUTTON TO BEGIN PLAY

» *RoadBlasters* enables you to level-skip, rather than forcing you to play through the entire game.

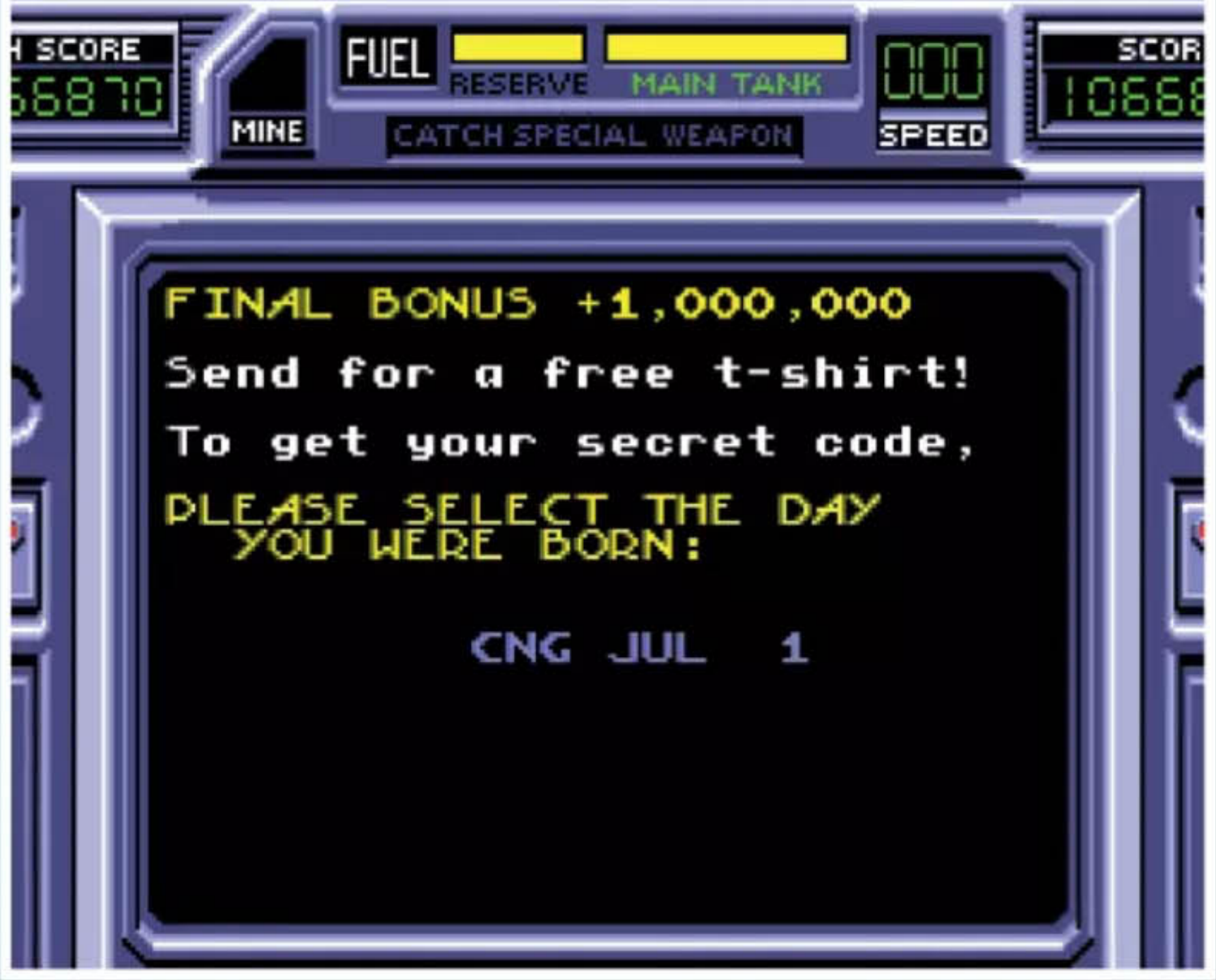
MULTIPLIER
01 X SCORE
FUEL
RESERVE
MAIN TANK
160
SPEED
SCORE
0135065
MINE
CATCH SPECIAL WEAPON

COMPETITION TIME

It's noted that the low price point for *RoadBlasters* made it a compelling purchase for operators at the time, but Mark Pierce reveals that a simple competition made them positively giddy with excitement for the game.

"We decided to implement a T-shirt contest," says Mark. "If you got to the game's last level, you got one chance at it. If you completed it, you got a huge bonus score and a screen came up that let you win a T-shirt – it gave you a secret code. If you sent the code in, we'd send you a *RoadBlasters* T-shirt."

Mark remembers that the promotion was hugely successful: "I can't tell you how many operators over the years have thanked me for putting that feature in *RoadBlasters*, due to the sheer number of people who'd come back to the game and play it just to try and win the T-shirt. I remember that we kept on giving out T-shirts long after the cut-off date we'd originally set!"

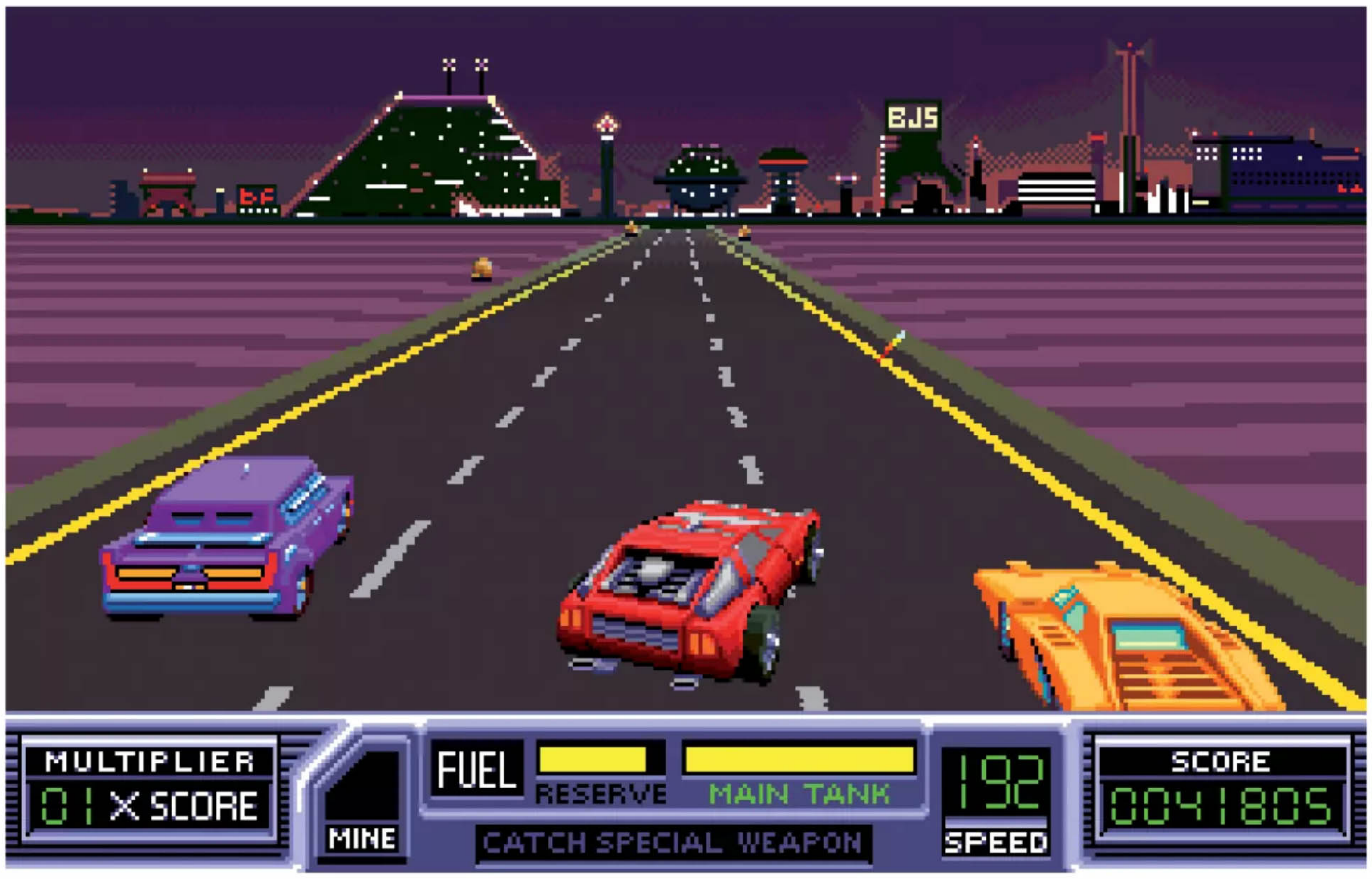

SCORE
56870
FUEL
RESERVE
MAIN TANK
000
SPEED
SCOR
10668
MINE
CATCH SPECIAL WEAPON

FINAL BONUS +1,000,000
Send for a free t-shirt!
To get your secret code,
PLEASE SELECT THE DAY YOU WERE BORN:
CNG JUL 1

to blaze past. Limited EPROM space meant horizon backgrounds had to work as stamps, forcing flipping and colour variations. "You couldn't just draw the pictures – you had to draw them and work out how to make them efficient," says Mark. But there was a bigger issue: Atari had no way to scale objects in 3D. "This meant we had to simulate scaling by drawing several versions of each graphic, and they'd 'pop' as they came towards you," says Robert, adding that the hardware also caused *RoadBlasters* to be a completely flat game, lacking hills and dips. This might have been fine if it wasn't for Sega's *OutRun*. "We became aware of that game halfway through *RoadBlasters*' development and we were salivating about Sega's hardware," laughs Mark. "If we'd had something similar, *RoadBlasters* would have had way more graphics, but we had to burn up so much ROM space with several versions of each car, bike, gun turret and roadside object." This also explains *RoadBlasters*' barren landscape, compared to Sega's classic racer – although one might easily argue that the Atari game's dystopian leanings suited such an artistic direction – as there simply wasn't room for more objects. "We were also limited from a performance standpoint, which is why there are always only a limited number of objects on the screen," says Mark. "We wanted to do tunnels and bigger explosions that scaled as they came towards you, but there was just no way. Sega could do that stuff because they just used one image for each object and scaled it."

But it wasn't all bad news for *RoadBlasters*. "I've worked on lots of games, and *RoadBlasters* remains endearing to people," says Mark. He thinks this is down to the game's simplicity, tight level design, and the uniqueness of the mash-up. "It got to be that, during development, we'd play other racing games without shooting and it would feel like something was missing," he says. And although *RoadBlasters*' hardware paled beside Sega's, Mark notes it was far cheaper: "It had an attractive price point for operators, and so the game was very successful – a surprise hit that came at a time when Atari needed it. Every now and again, you're fortunate enough to work on something that strikes a chord with pop culture, is accessible to play, and that does well for everyone – *RoadBlasters* was one of those games."

> "I WORKED ON LOTS OF GAMES, AND ROAD-BLASTERS REMAINS ENDEARING"
>
> MARK S PIERCE


BJS
MULTIPLIER
01 X SCORE
FUEL
RESERVE
MAIN TANK
192
SPEED
SCORE
0041805
MINE
CATCH SPECIAL WEAPON

THE MAKING OF HARD DRIVING

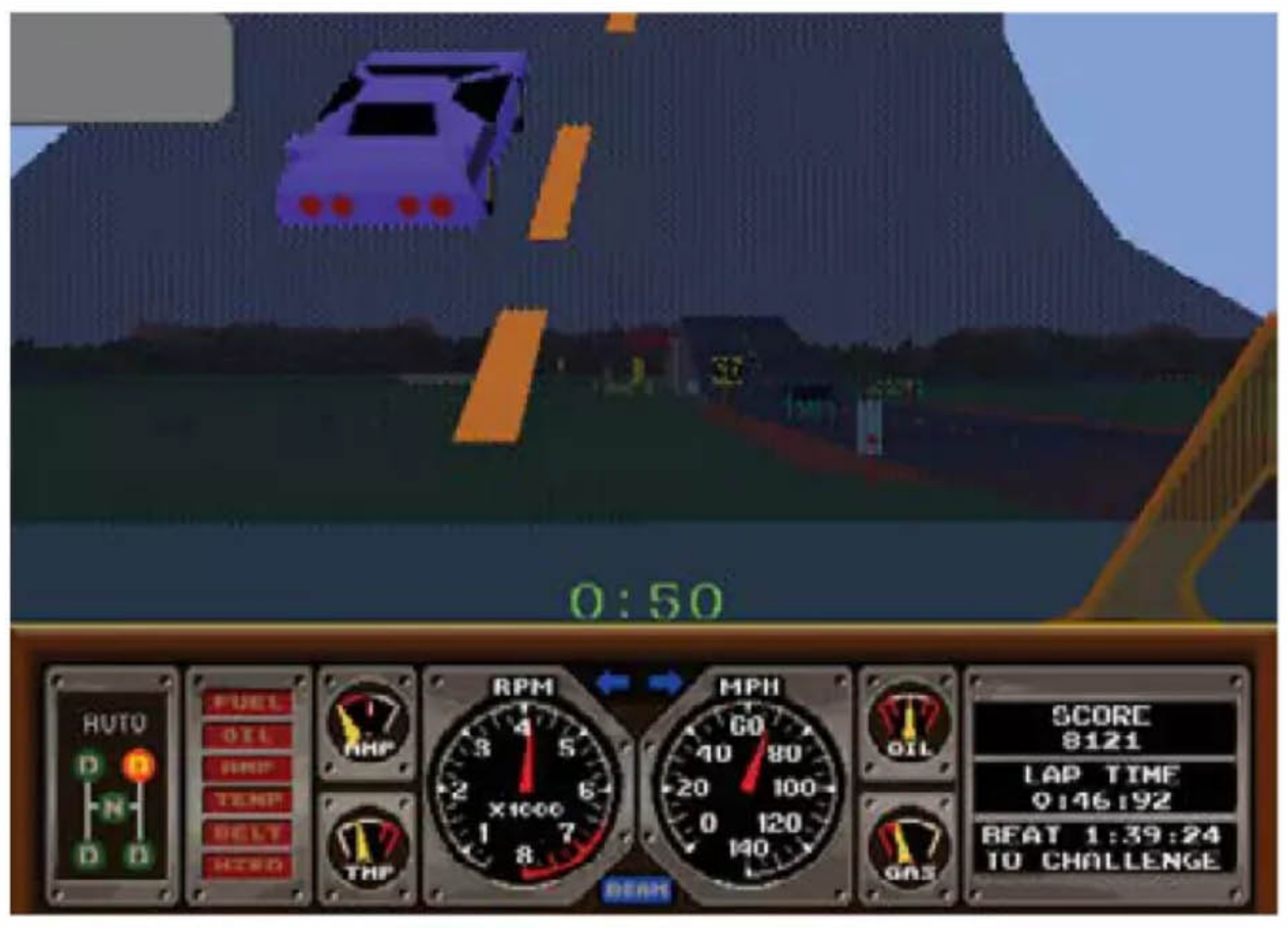
ATARI GAMES' HARD DRIVIN' SPED UP THE CHARTS AND USHERED IN A GOLDEN AGE OF POLYGON-FUELLED RACERS. RICK MONCRIEF AND MAX BEHENSKY TELL RORY MILNE HOW THEIR PIONEERING SIMULATOR TOOK POLE POSITION AT THE ARCADES

The transition from sprite to polygon gaming during the mid-Nineties felt like a seismic event but was actually just the predictable tipping of a scales that had for so long weighed in favour of 2D over 3D visuals. As the Eighties had advanced so had polygon technology, and soon 3D visuals offered a unique selling point – realism. This wasn't a point lost on Rick Moncrief, whose background – rather than being sprite-based – lay in Atari Inc's XY vector technology.

"Not long after starting at Atari in April 1977, I ran across Rosenthal's Space Wars," Rick begins. "I was immediately impressed with the crisp high-resolution portrayal. My argument for XY was that some space games were better represented with high contrast vectors drawn on a continuous phosphor. Rich Moore forged out our first XY game – Lunar Lander, then Ed Logg knocked it out of the park with Asteroids. I started a group named Support Research and we continued development of XY, increasing the speed of the vector generator and converting to colour. The group's goal was to provide technology to game groups in Coin-Op."

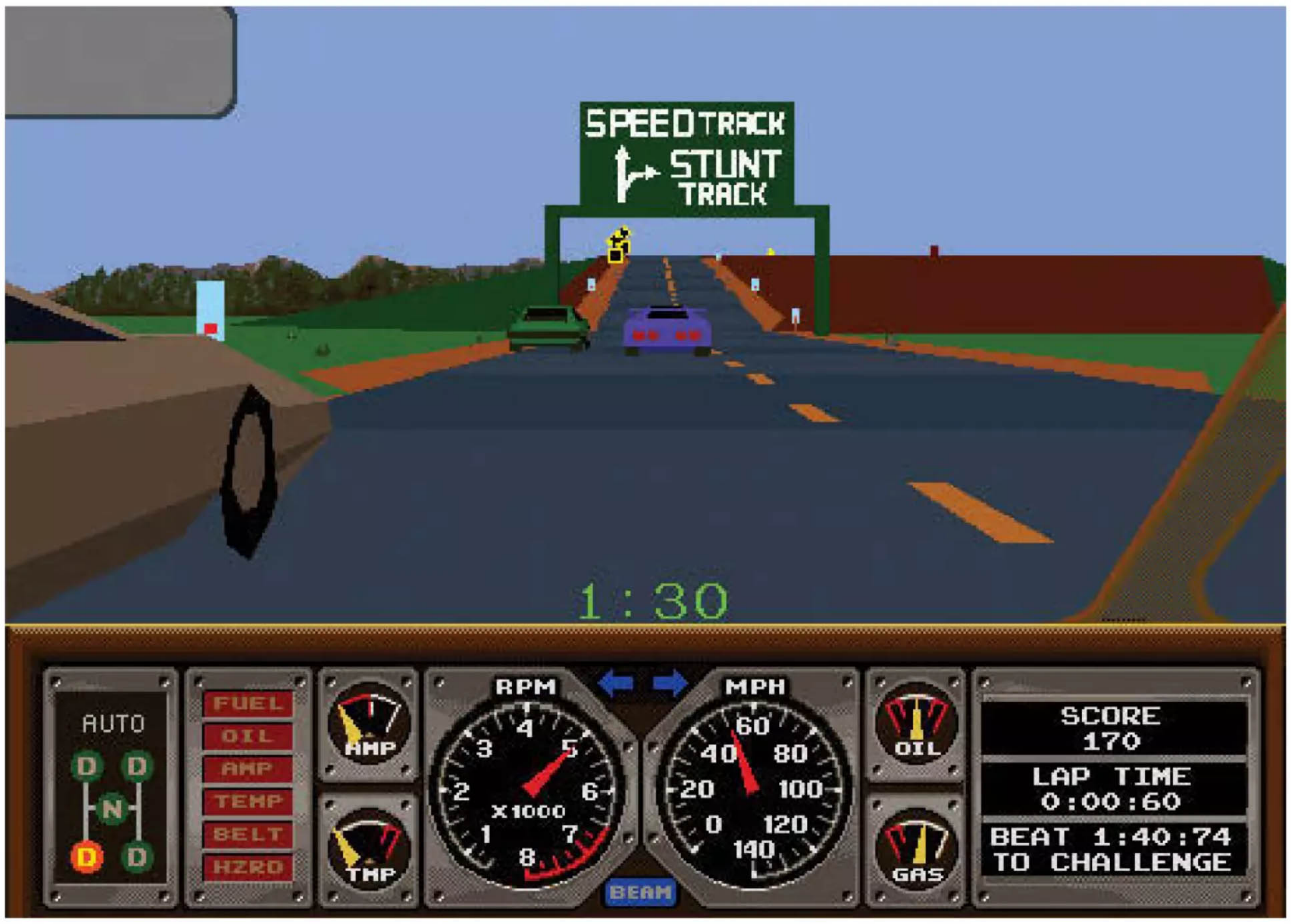
While Rick's group was refining Atari's XY system in California, MIT graduate Max Behensky was joining the firm's Massachusetts research lab. "In 1982, friends of mine and I started work at the Atari Cambridge Research Lab. Marvin Minsky had come up with the idea for a 'force feedback' joystick. I thought that was really cool, and so I got together with Doug and Peter Milliken, and we built one. The prototype was

» The loop in Hard Drivin' is difficult enough without meeting another driver halfway through.

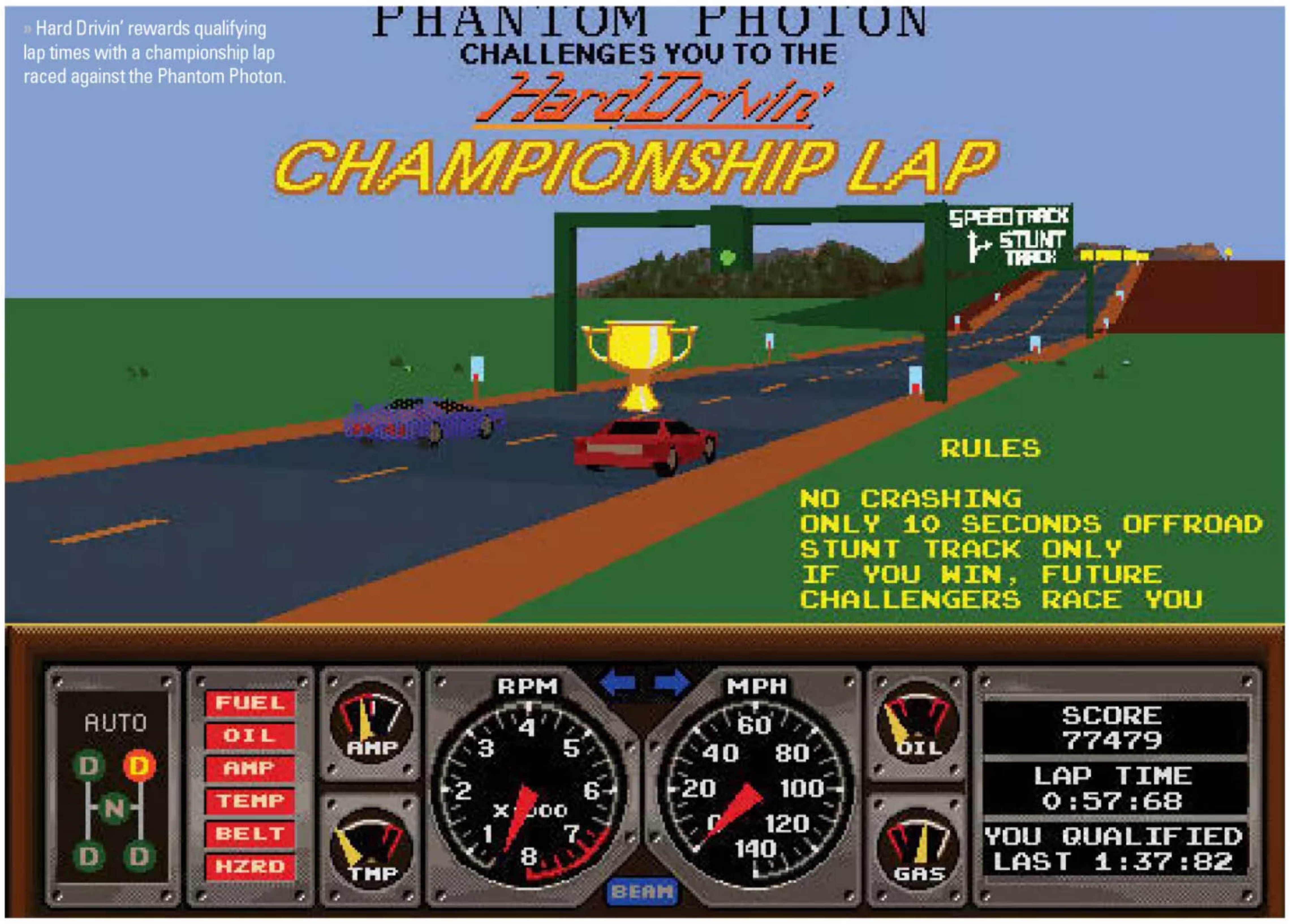

0:50
AUTO
FUEL
OIL
AMP
TEMP
BELT
HZRD
RPM
MPH
SCORE
8121
LAP TIME
0:46:92
BEAT 1:39:24
TO CHALLENGE
BEAM

IN THE KNOW

- **Publisher:** Atari Games
- **Developer:** Atari Games
- **Platform:** Arcade
- **Year released:** 1989
- **Genre:** Driving Simulator


SPEEDTRACK
STUNT TRACK
1:30
AUTO
FUEL
OIL
AMP
TEMP
BELT
HZRD
AMP
TMP
RPM
MPH
OIL
GAS
SCORE
170
LAP TIME
0:00:60
BEAT 1:40:74
TO CHALLENGE
BEAM

» Hard Drivin' starts you behind other drivers, but lap times are more important than position.


PHANTOM PHOTON
CHALLENGES YOU TO THE
Hard Drivin'
CHAMPIONSHIP LAP

RULES
NO CRASHING
ONLY 10 SECONDS OFFROAD
STUNT TRACK ONLY
IF YOU WIN, FUTURE
CHALLENGERS RACE YOU

SCORE 77479
LAP TIME 0:57:68
YOU QUALIFIED
LAST 1:37:82

» Hard Drivin' rewards qualifying lap times with a championship lap raced against the Phantom Photon.

a success, and it got me thinking about other force feedback game controls. Doug's dad Bill had done some of the pioneering work on mathematical analysis of car handling, and we were both motor heads. We decided to come up with a force feedback steering wheel that could give accurate control to a driving game. We built a prototype, and took a trip out to California to Atari to show these controls around. I met Rick Moncrief – he wanted to develop a driving simulator, and our force feedback steering wheel was perfect for that."

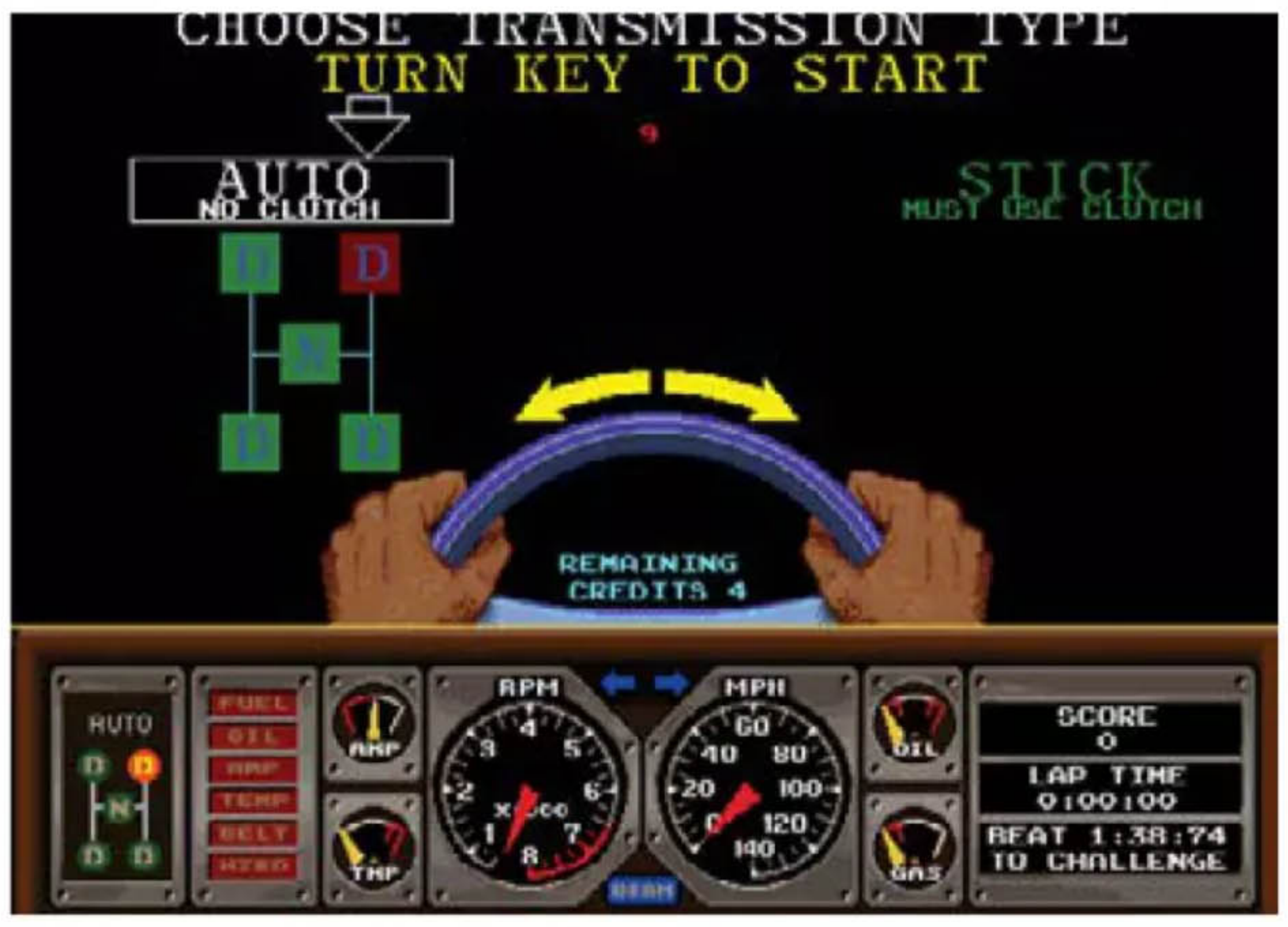
Post-crash

After this meeting, however, during the spring of 1984, Atari Inc crashed, which affected both men and the simulator they had discussed. "During and after the crash of Atari Inc, I tried to hold a portion of Coin-Op together," recalls Rick. "My days were consumed with personnel and project management reviews. [I was] cut much more as a technologist than a project and personnel manager. I was finished with [Support Research] and wanted to design and build a product. After I started [a new, smaller] group it needed a name for accounting and the like. The Applied Research crew was a 'hard science' type group. Erik Durfey 'transitioned' with me. He was in the thick of every system we built. I added people to Applied Research based on project needs. The first was Max Behensky."

Max remembers the effects of the crash and also how useful his research and connections proved on joining Rick's team. "Atari got broken up, and the Cambridge lab closed down. In the spring of 1985, Rick gave me a job with his new Applied Research group to work on developing a driving simulator. The force feedback controls came first. Next, I worked on the physical model of car handling with the assistance of Doug Milliken and his dad. We were waiting on another group to develop a 3D polygon display system, but it kept getting delayed, so we decided to roll our own."

Although pleased by the progress made on modelling, as Rick explains, that polygon display system and Max's coding workload would require his team to expand. "After six months of trying to get traction on the modelling effort we were finally in very good hands. Max didn't have additional weekends to help meet deadlines – he needed programming help. Max found Stephanie Mott might be interested and talked her over. I planned to use 3D hardware from another Atari effort, [but the] hardware would not be ready. I talked to Jed Margolin, I remember being surprised that he was interested. Jed was part of Support Research and had taken over the vector generator, and I thought he wanted to finish Tom Cat."

Rick's team was in place with Max as lead developer, but as Max points out, their simulator would be a team-effort, which was initially aimed at learner drivers. "I was the lead software engineer and game designer, although all the members of our group had input into all the aspects of game design, software design, and hardware design. It is important to realise that Hard Drivin' started life as a driver training simulator. Rick wanted to use accurate physics, good quality audio, and force feedback


CHOOSE TRANSMISSION TYPE
TURN KEY TO START
AUTO
NO CLUTCH
STICK
MUST USE CLUTCH
REMAINING CREDITS 4
SCORE 0
LAP TIME 0:00:00
BEAT 1:38:74 TO CHALLENGE

» They cost you engine breaking and control but Hard Drivin's automatic gears are the easier option.

Driven by Hard Drivin's Hardware

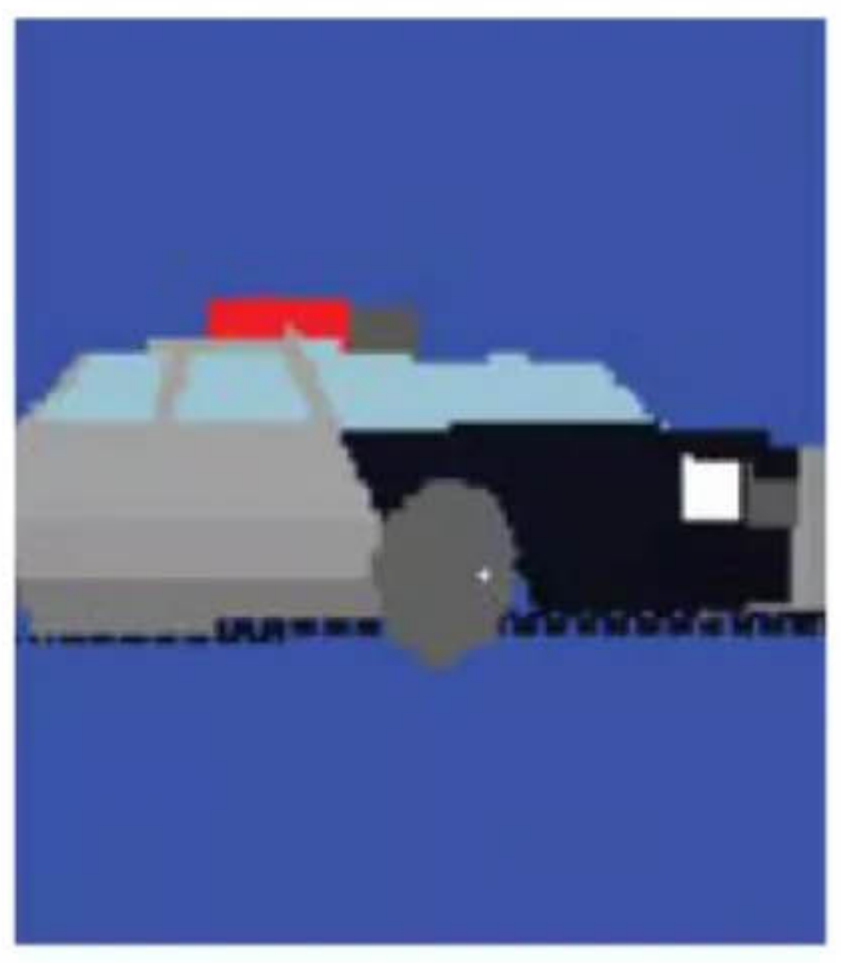
STUN RUNNER 1989

Ed Rotberg's STUN Runner took the Hard Drivin' hardware in a completely different direction. Ed's classic is a fusion of tube shooter and 360-degree bobsleighing that runs at breakneck speed.

RACE DRIVIN'

1990

This sequel to Hard Drivin' runs on an upgraded version of the original game's hardware. Race Drivin' also features several gameplay improvements such as a variety of extra tracks and a choice of cars.



AGC MOBILE OPERATIONS SIMULATOR

1990

A driving simulator with Hard Drivin's tech for multi-user setups of multi-screen units. These provided training for American police forces.

BMX HEAT 1991

Yet another prototype game, BMX Heat sports pedals to make your virtual bike move and even a fan to simulate wind blowing in your face. Its thrilling gameplay revolves around a national BMX racing competition.

STEEL TALONS 1993

Steel Talons is to helicopter simulators what Hard Drivin' is to driving sims. This shooter carefully balances realism with fun and was co-developed by Atari legends Ed Rotberg and Ed Logg.

STREET DRIVIN' 1993

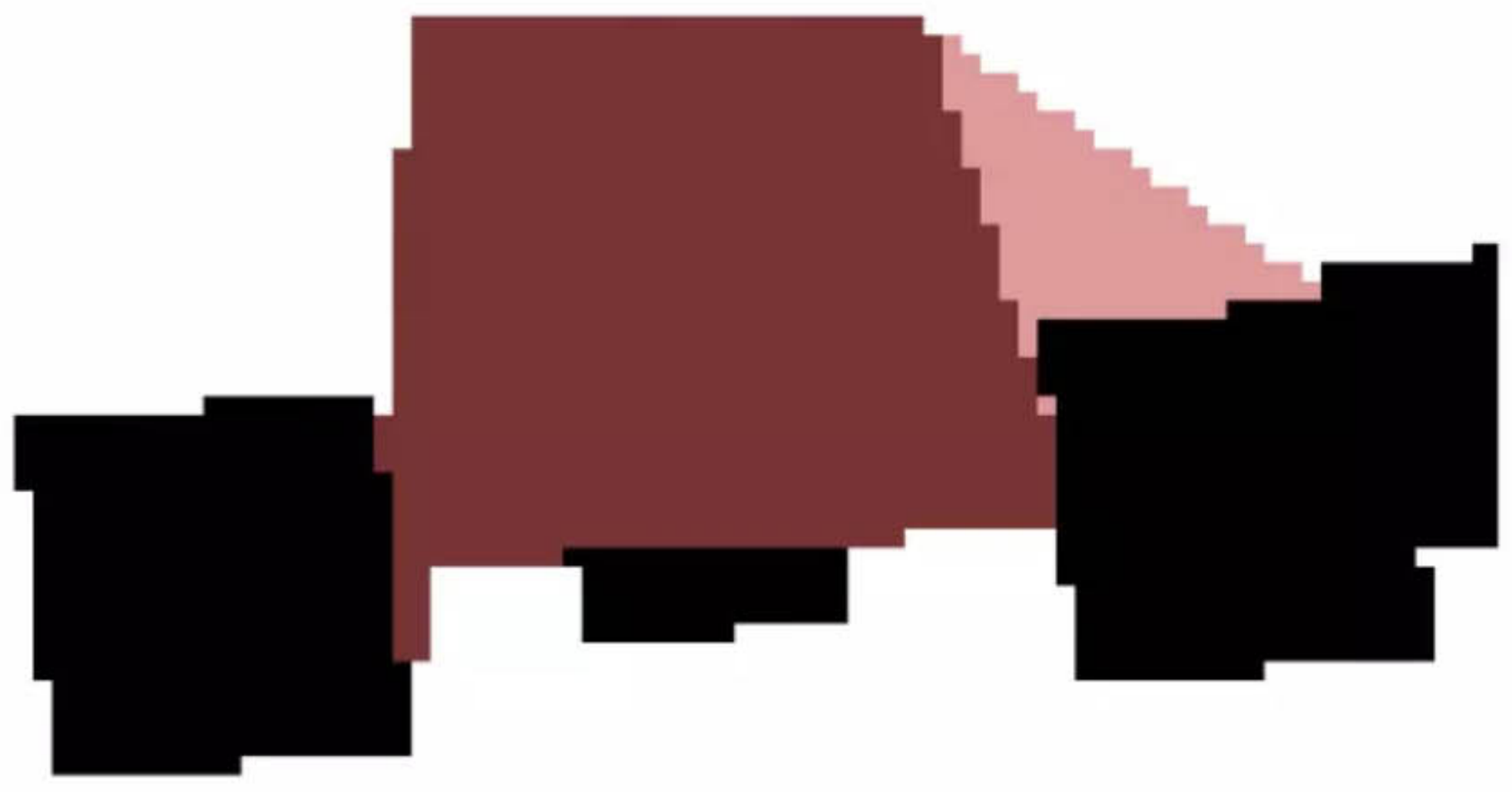
This second Hard Drivin' sequel sticks to the original's proven formula but didn't get past the prototype stage. Its main attractions are a stock car track and the option to drive a police car.

PIONEER POLYGON RACERS

WINNING RUN

YEAR: 1988 SYSTEM: ARCADE

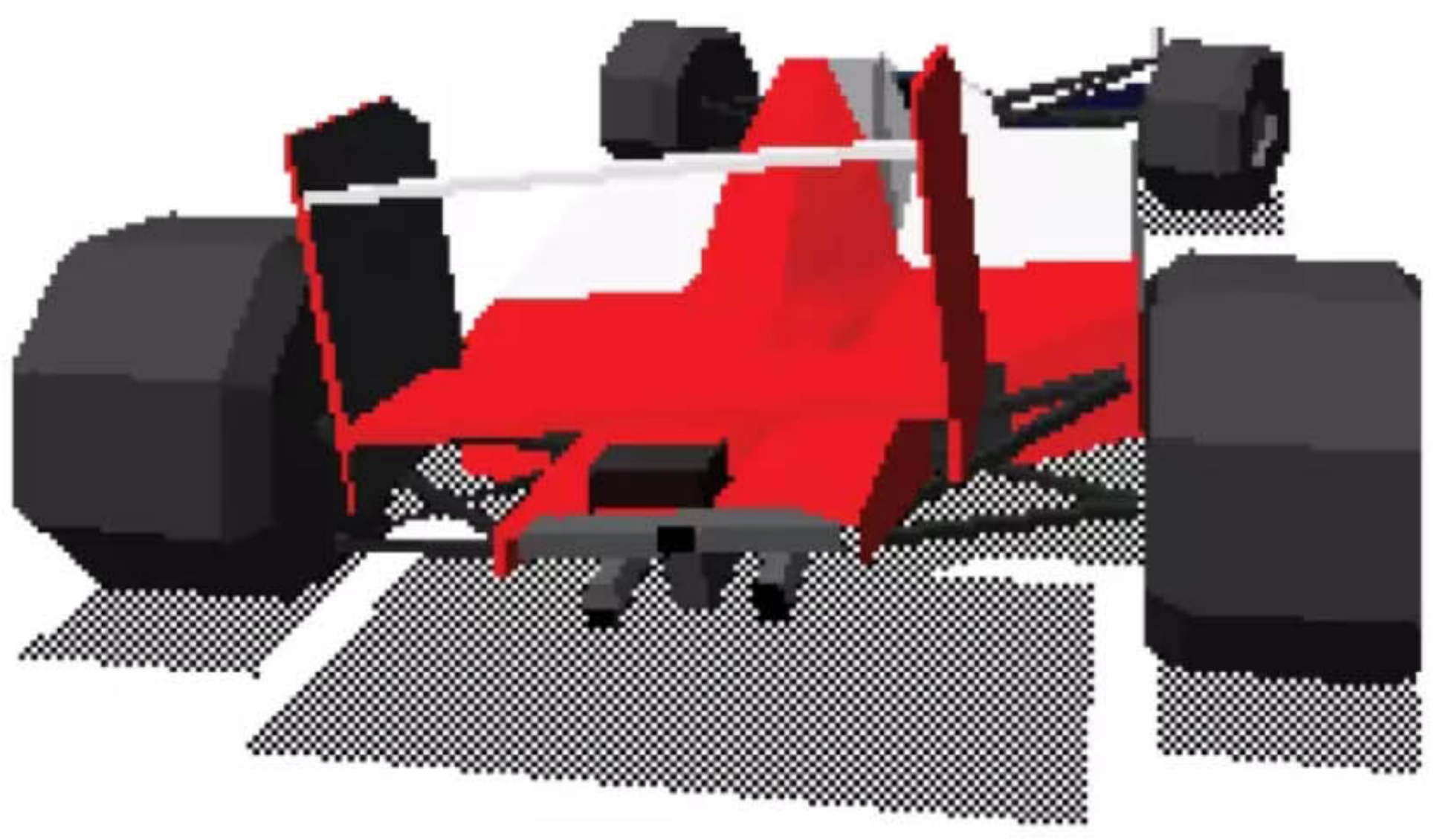
Hard Drivin' may be the earliest polygon racer most gamers remember, but Namco's Winning Run roared into amusement arcades a year before the Atari coin-op. Winning Run is very much a spiritual successor to Pole Position, in fact, it feels like a polygon recreation of Namco's genre-defining classic.



STUNT CAR RACER

YEAR: 1989 SYSTEM: VARIOUS

Although Geoff Crammond's Stunt Car Racer may look basic in comparison with later polygon racers, there's no denying that it excels in gameplay terms. Stunt Car Racer also has you tearing around its insanely dangerous courses at high speed – even in its 8-bit incarnations – which is an impressive feat.



VIRTUA RACING

YEAR: 1992 SYSTEM: ARCADE

The visual benefits Virtua Racing gained from the rapid advances made in polygon-generating tech during the Nineties are clear to see. Looks aside, Yu Suzuki's first polygon-powered title offers gameplay to rival his earlier sprite-scaling racers, and in many respects, Virtua Racing improves on classics like OutRun.

4D SPORTS DRIVING

YEAR: 1990 SYSTEM: VARIOUS

It would be slightly unfair to describe 4D Sports Driving as a Hard Drivin' clone, but only slightly. Let's emphasise the game's positives, though. 4D Sports Driving has personality; comical virtual opponents taunt you before and after races. The game also boasts imaginative courses and a selection of customisable cars.

RIDGE RACER

YEAR: 1993 SYSTEM: ARCADE

Other than upping the stakes in what would become a polygon-count war, Ridge Racer was also one of the first polygon racers to feature texture mapping. And although Ridge Racer's gameplay has had its critics over the years, it should be noted for popularising the corner-cutting concept of drifting.

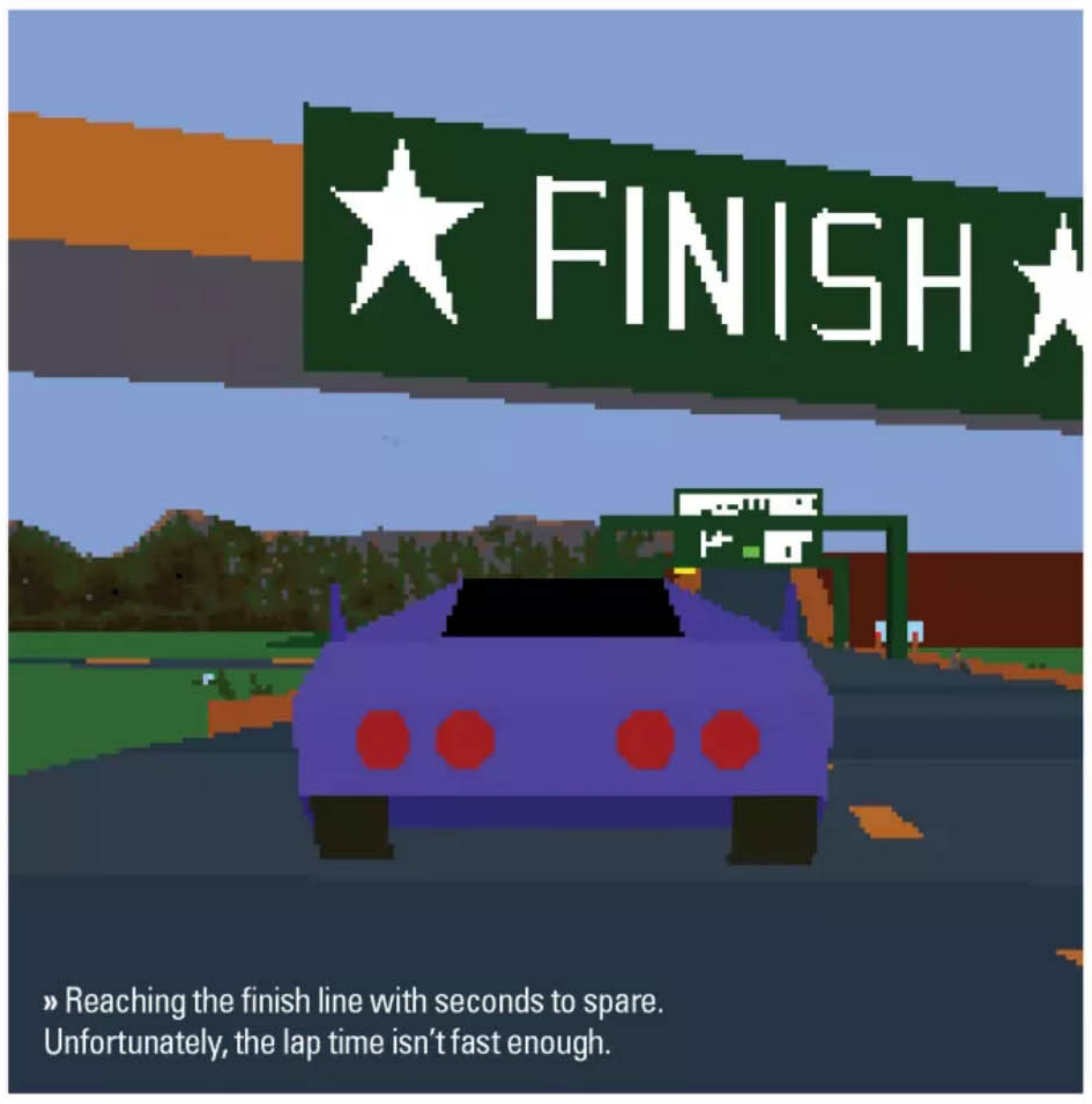
controls to provide a system to teach students how to drive. We spent from 1985 through early 1988 developing the hardware and software to do this."

As Max and Rick remember, various factors influenced their simulator's transition from trainer to videogame. "Linda Benzler worked with Doug Milliken and surveyed driving schools about the potential for a driving simulator. The results were solidly negative," Rick notes. "The answers seemed to fit the notion of multiple drivers watching filmstrip projection – not the interactive system that we were proposing." Max adds, "it became obvious to us that Atari didn't have the marketing resources to sell anything other than videogames at that point. Also, Atari was struggling financially and we figured we had better come up with a game or we might be out of a job."

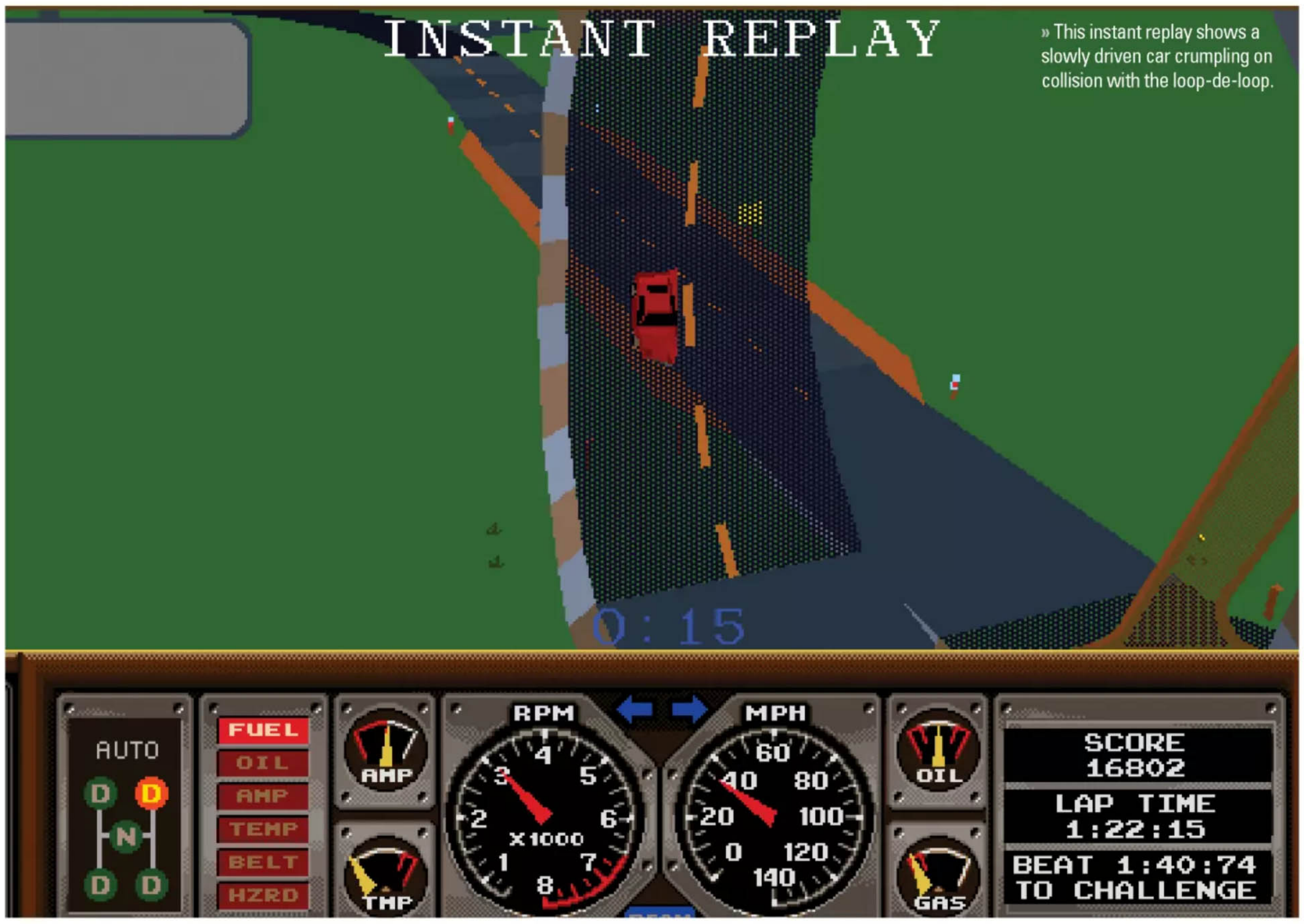
Achieving realism

Rick would take an analytical approach to this repurposed project in order to make it more fun while retaining its realism. "I surveyed driving games and tried to identify aspects that could be improved on and others that needed to be equalled. The fantasy of Hard Drivin' was driving that was as real as possible. Yes, we had unreal stunts in the game, but they would really work if built and driven in the real world." Max agrees and shares an inspiration, "We took the building blocks of our driving simulator, added the speed track and stunt track – which could really take advantage of accurate physics – and Hard Drivin' was born. The tracks had no relationship to real-world courses, although the open drawbridge was inspired by the scene at the beginning of the Blues Brothers movie!"

But as Max concedes, the tech required for Hard Drivin's realistic gameplay and development would come at a cost. "The cabinet design started around when we switched to doing a videogame, and the audio system came around that time as well. All the hardware was developed specifically to meet the needs of the game. The main board set cost around $1,600, and the whole game came in at close to $4,000. This was unheard of at Atari – they tried to keep the main board electronics to $200-$300. However, we couldn't do a simulation driving game without a powerful main processor, a co-processor just for the physics, a fixed-point DSP for the polygon math, a polygon-rendering engine based on TI's GSP and a separate audio DSP.



» Reaching the finish line with seconds to spare. Unfortunately, the lap time isn't fast enough.



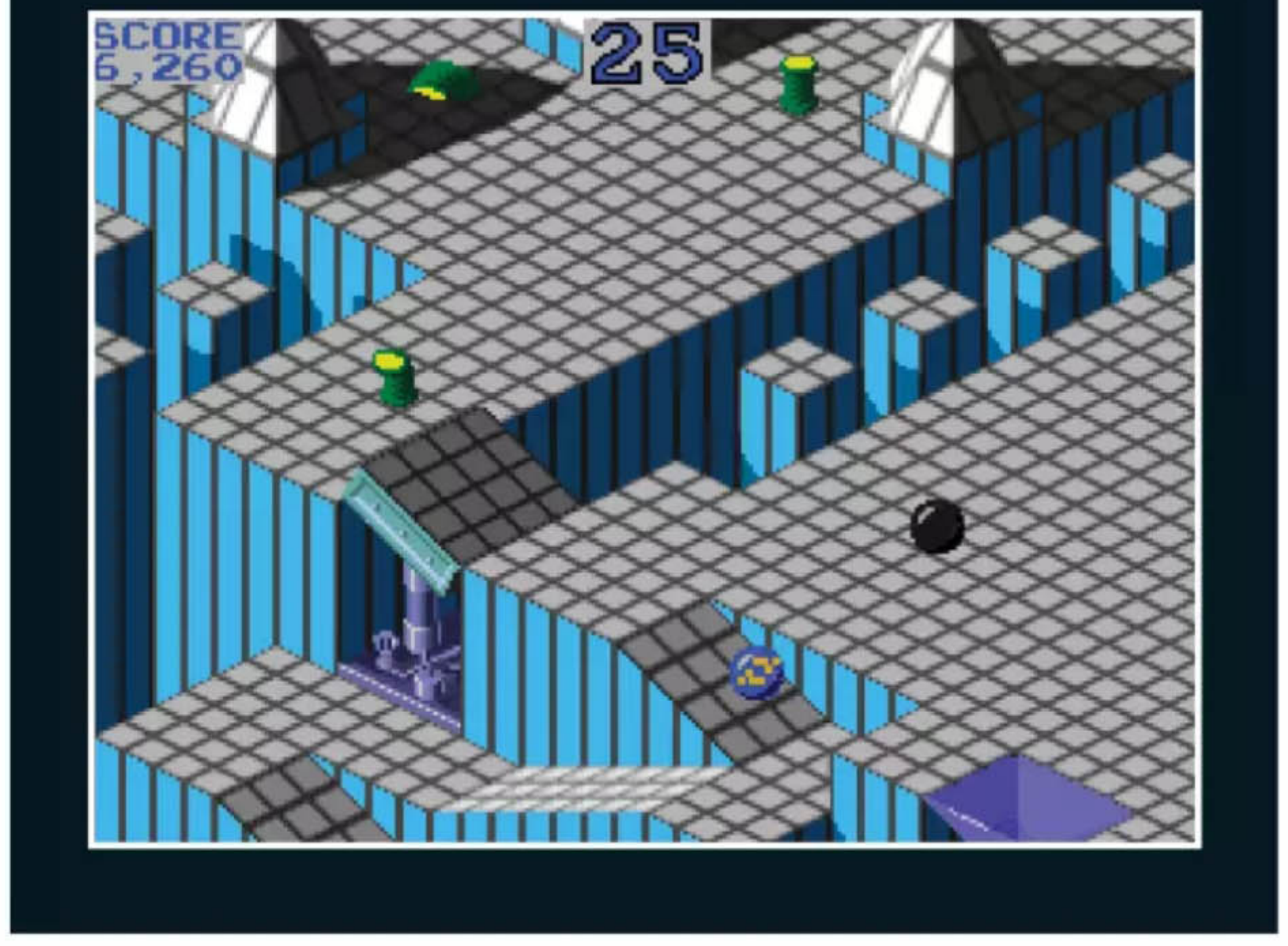
» This instant replay shows a slowly driven car crumpling on collision with the loop-de-loop.

DEVELOPER HIGHLIGHTS

Marble Madness (PICTURED)
System: Arcade
Year: 1984

Paperboy
System: Arcade
Year: 1984

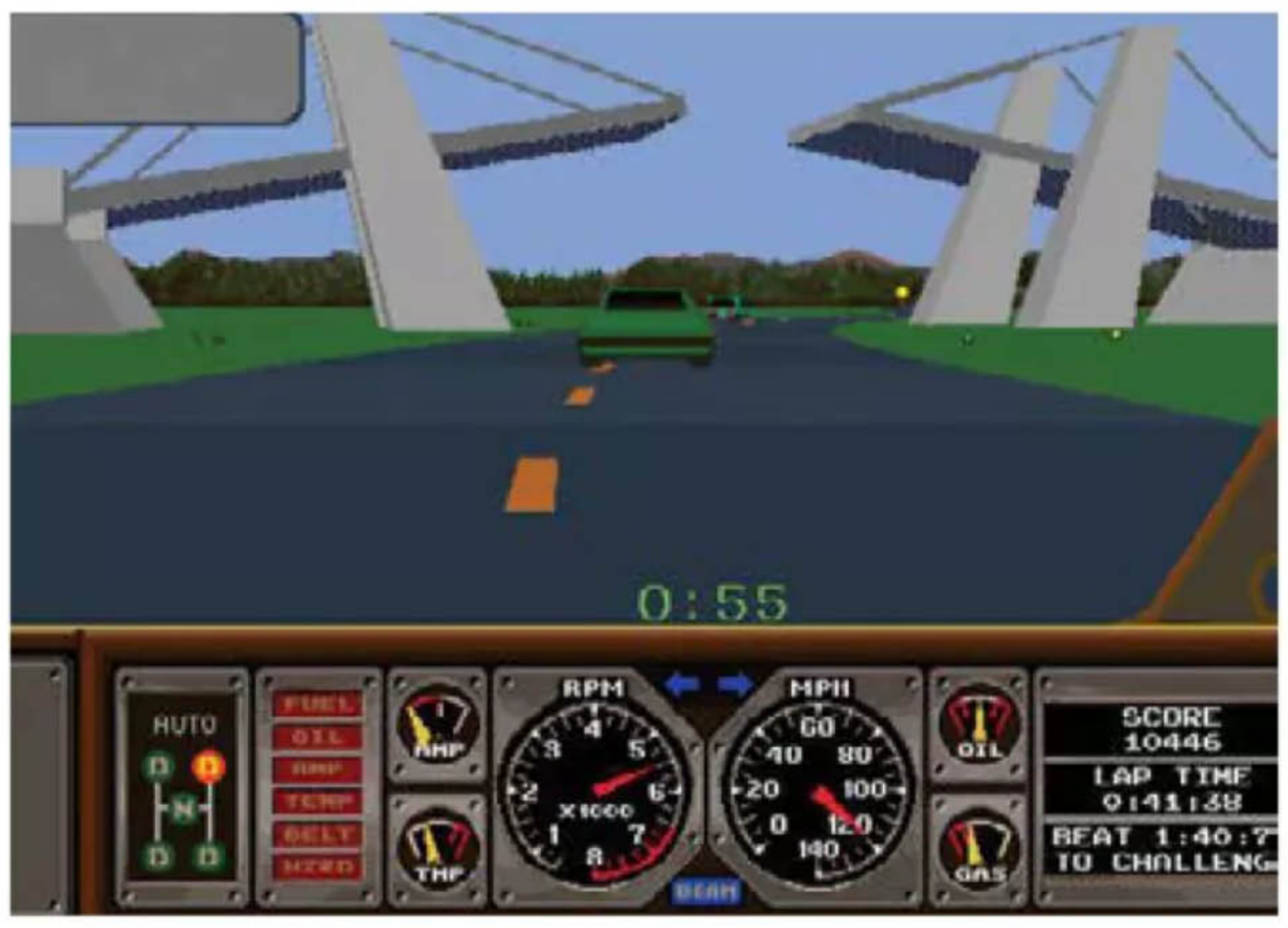
Gauntlet
System: Arcade
Year: 1985



The main 68010 processor code was developed on a VAX using C. Our development system was an expensive in-circuit emulator that plugged into the processor socket and downloaded the program and data via a serial link from the VAX. It took 15 minutes to download the code, so we got good at patching the compiled assembly language to help debugging. We had no emulators or debuggers for the co-processors."

> “THE OPEN DRAWBRIDGE WAS INSPIRED BY THE SCENE IN THE BLUES BROTHERS MOVIE”
> MAX BEHENSKY

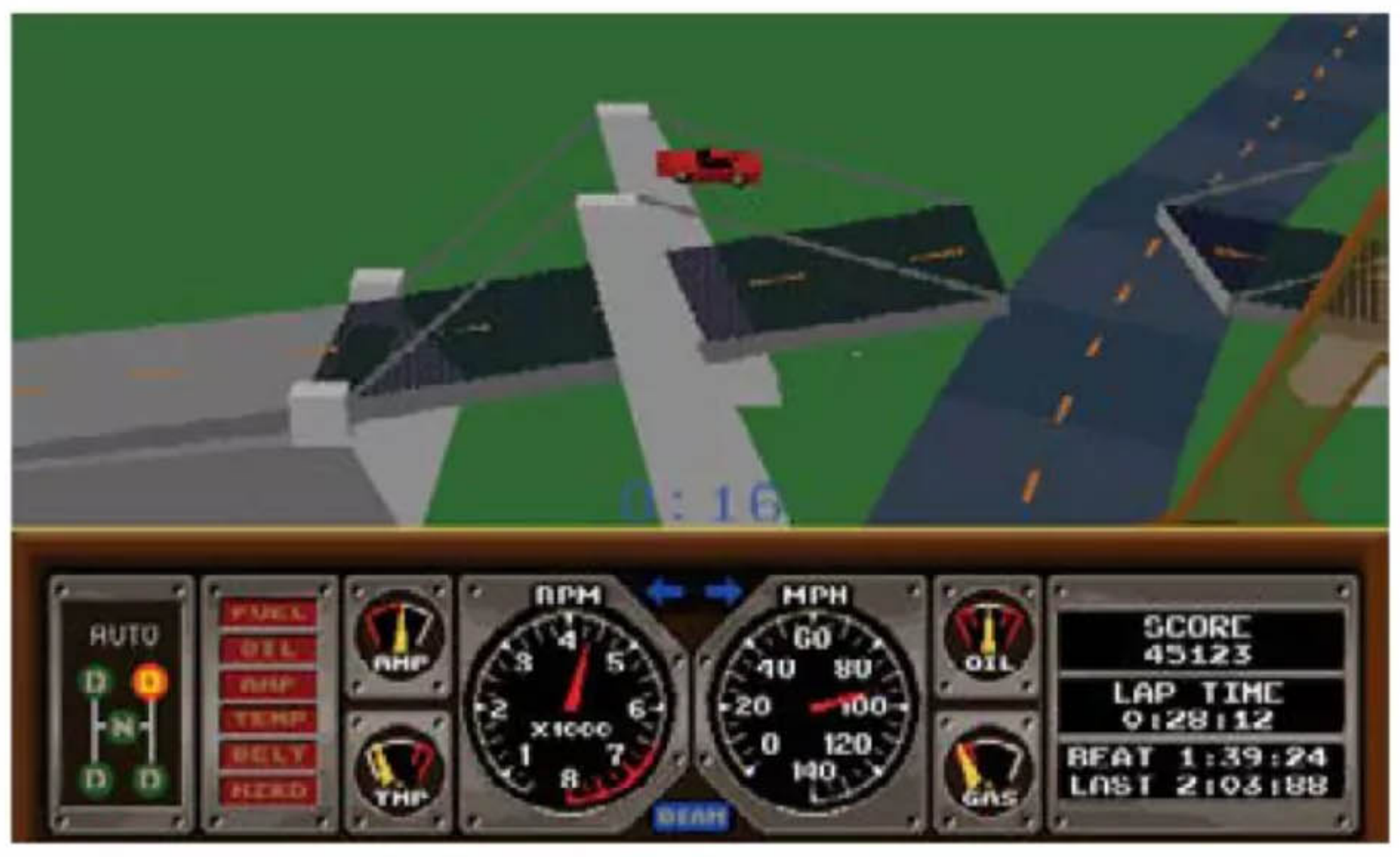
The game's hardware would also require a rescued polygon editor paired with a track editor coded by Max, who was as new to polygons as he was to game development. "Atari had developed an earlier flat-shaded polygon engine based on an expensive custom bit-slice processor [for a game] called Air Race. That game never went anywhere, but Jim Morris had built a polygon editor using that hardware. Most of the 3D art was drawn using this system. I also built a custom '3D world editor' that allowed you to lay out the tracks using the 3D objects from the polygon editor. I had never done a videogame before, and had no experience with polygons. We all pretty much figured the polygon stuff out as we went along. For me, it was all new – Stephanie likewise. 3D polygons were a natural extension of 3D vectors so Rick and Jed found it familiar. I think it probably helped that nobody was used to sprites or bitmaps. When I was working on the game design, I initially had two things I wanted to incorporate. The first was 'Real Physics' – this was the most fundamental aspect of the game. I had driven lots of driving games before, but the traffic in those games just got in your way. I wanted to have 'real' competition. We didn't have any compute power to simulate anything other than the driver's vehicle, though. Stephanie and I came up with a scheme to record the data that came from the driver's car. All the traffic in Hard Drivin' was pre-recorded this way. This is why if you bump into another car your car gets affected but the other car doesn't. This data could be used for instant replay, and for the championship lap. I don't remember who came up with the idea for instant replay, but as soon as we tried it we knew it was cool!"



» Behind the pack but looking to catch up by doing 120 mph round a corner.

After years of hard work, the nearly complete Hard Drivin' would be play-tested before release but not by focus groups. "The game took so long to develop because everything was pretty much new, and there were only five people working on it full time. We kind of flew under the radar until we were nearly ready to test. It was mostly tested in-house by us and other Atari employees. Normally, experienced arcade players would be brought to the office and shown the game, [but] if it wasn't what [they] were used to that could doom your game. We got most of the features working then brought it to [the] Golfland [arcade] on a busy night. The game was mobbed, and marketing interviewed players. Putting [it] in this more natural environment showed us that we were on the right track."

» As an instant replay shows, jumping the gap in this bridge too quickly sends you flying.



With this approach to testing proving sound, Hard Drivin' was soon released to great critical and commercial acclaim. "I had spent my working life until 1985 in academic environments. It was just so cool to travel to another city and see people in a random arcade enjoying something that I had a large part in developing," Max beams.

On his final thoughts, Max offers, "Hard Drivin' was the most original project I've ever worked on. The people I worked with were great. It was extremely challenging, we pulled it off, and it was a great success."

Rick Moncrief provides the last words. "Game and project ideas at Atari came from engineers. We knew how the technology of the day could be applied. For me, the physics of driving have always intrigued. Happily, I got to give a physics driving simulation game a try."

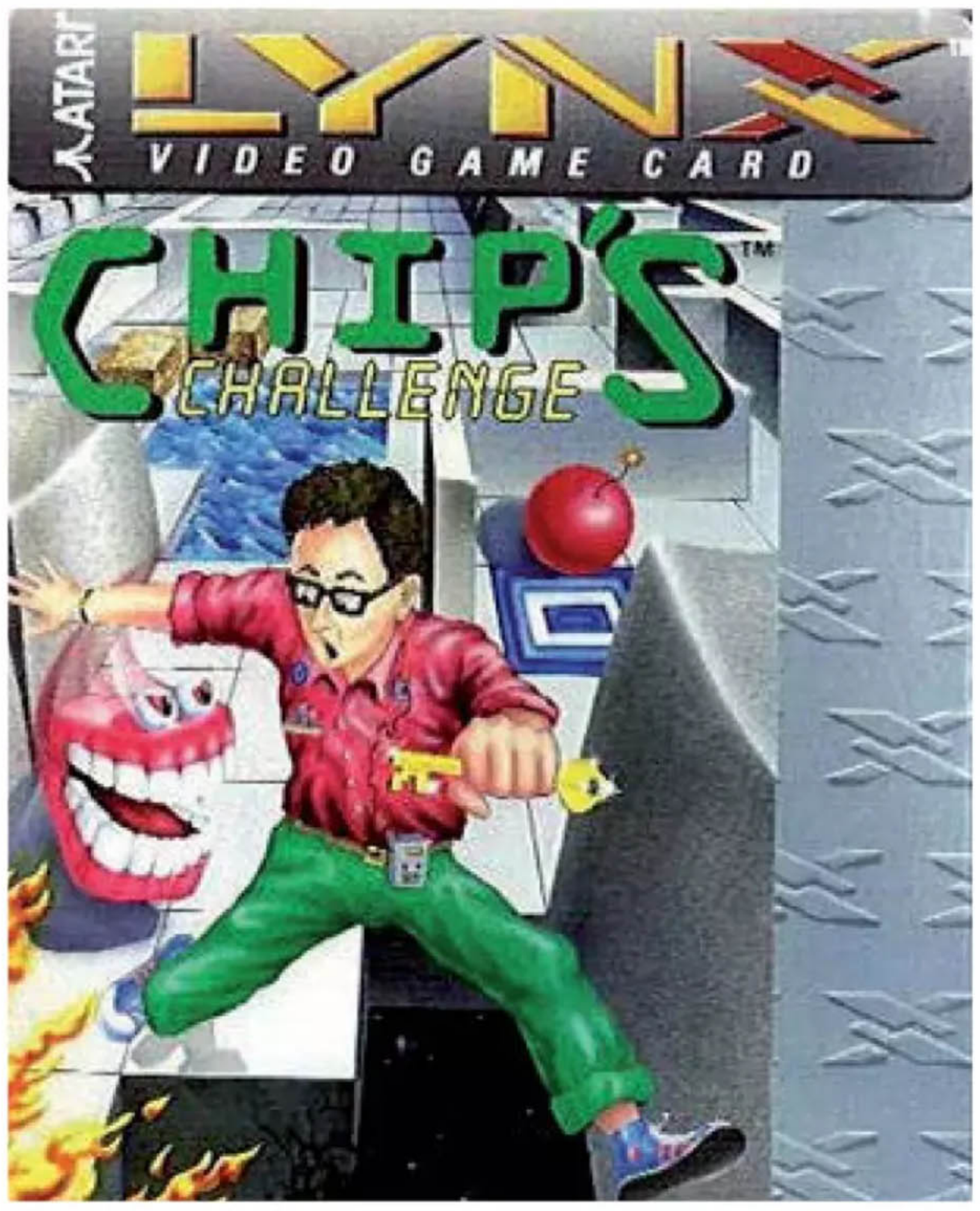
Many thanks to Rick Moncrief and Max Behensky for their input. Documents one the game are found at www.generalsimulation.com/history/harddrivin.

THE MAKING OF CHIP'S CHALLENGE

IT WAS A TALE OF LOVE, A PURSUIT DRIVEN BY DESIRE. AND THAT WAS JUST THE STORY OF CHUCK SOMMERVILLE THE CREATOR OF CHIP'S CHALLENGE. DAVID CROOKES TAKES A LOOK AT HOW CHUCK CREATED ONE OF THE BEST PUZZLE GAMES EVER MADE

IN THE KNOW

- **Publisher:** Atari
- **Developer:** Epyx
- **Platform:** Atari Lynx
- **Year released:** 1989
- **Genre:** Puzzle
- **Expect to pay:** £5+ ($5+)



Chip McCallahan was a nerd. More to the point, he was a nerd who was in love. And, like any nerd, he had to prove his worth; otherwise he wouldn't be allowed access to the exclusive Bit Buster Club. A refusal would spell disaster – for then there would be no chance of him ever impressing Melinda The Mental Marvel, the hot girl he met in the school science lab. And that, dear readers, is Chip's ever-so-slightly-difficult challenge.

It's a game full of problems, that's for sure. How else could you describe working your way around Melinda's clubhouse in order to impress? It may sound easy enough on paper, but when it is strewn with deadly monsters, cosmic chip sockets and – just as bad under the circumstances – many locked doors, then you do have to question just what Chip saw in the girl and whether it was all worth it.

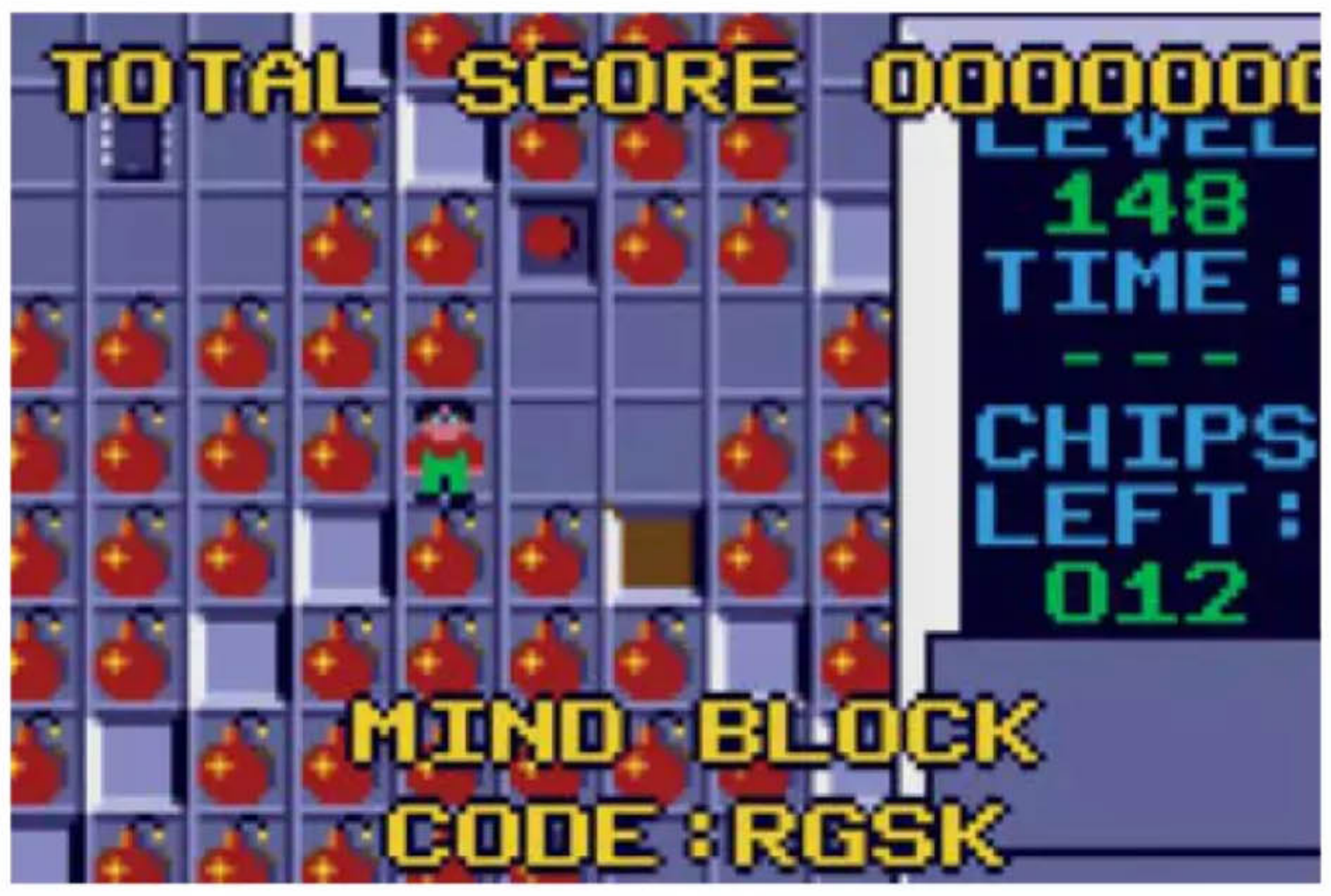
Secret squirrels

And then you look at what went on behind the scenes as the game was meticulously put together. Substitute Melinda for Chuck Sommerville, the creator of the game, and Chip for the army of programmers who wanted in on Epyx's elite club and it becomes clear the game was a stark case of life imitating art.

"It was a little cloak and dagger in the building where I made Chip's Challenge," explains Chuck. "I was making the game for the Lynx and I was in a closed area at Epyx with key-card access. I remember there being some resentment from the games programmers who weren't working on Lynx games. They felt excluded and shut out."

Epyx was very protective of its Handy project and it didn't want any details about the handheld to be leaked to the outside world. So it ensured that only a few people would know about the machine and its games and so the very best programmers were chosen; then ordered to keep quiet. It meant Chuck beavered away for ten weeks on Chip's Challenge in a kind of secret society; one that actually had an inner and outer core. Although Chuck stayed in the outer core, it didn't bother him. "I was just glad to be working on the Lynx because it had a fast rendering engine," he said. "It was a lot of fun and it allowed things to be done that we could never do on the Commodore 64."

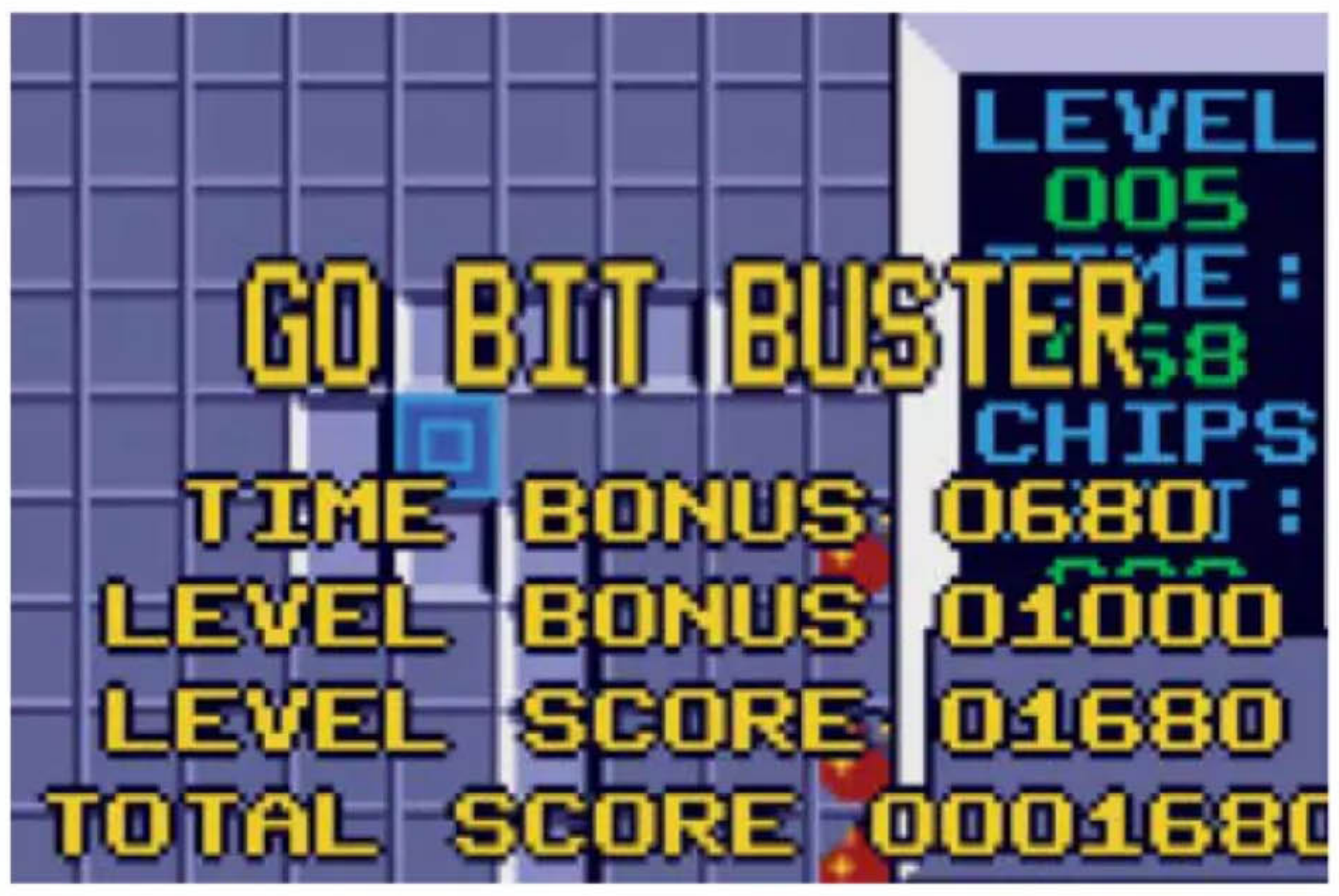
The inner level of security surrounded the encryption team, which would take the final binary and add the



TOTAL SCORE 000000
LEVEL
148
TIME:

CHIPS
LEFT:
012
MIND BLOCK
CODE:RGSK

» You can unlock further levels by finding the passwords. Handy, as there's no save system.



LEVEL
005
GO BIT BUSTER
CHIPS
TIME BONUS 0680
LEVEL BONUS 01000
LEVEL SCORE 01680
TOTAL SCORE 000168

» When you make it through a level, the game gives you some lovely triumphant stats. Go Bit Buster!

'magic touch' that would bless the code and let it run on a production unit. It is little wonder with all of this Blyton-esque secrecy that Chuck came up with the plot he did.

"The plot and the characters came towards the end of development," Chuck explains. "Maybe there were some parallels but I just wanted to create a high-tech game story. I invented the name while in a conference meeting, intentionally taking the similarity between the name Chip and my name, Chuck. I also wanted a second meaning, so the dual description of Chip as the main character's name, and chip, as in a computer chip was also intentional."

Chip's Challenge had 148 levels (with an extra one later added to the Microsoft version). The final four levels were accessed only via a password and were treated as bonuses. The ending sequence plays after Level 144 so those unaware of the passwords or not able to find them miss out on the rest. It's worse for PC owners of the game since there are five new bonus levels.

Some of the levels revolved around action, others were firmly puzzle-oriented. Some had time limits to urge the player on and add variety. The idea was that you used the Lynx's D-pad to move Chip around the cleverly designed levels. Once enough chips were collected, it was then possible to open the chip socket, leave the stage and proceed to the next level. The player's score was also an important factor. It was not just a matter of completing the game or a level but trying to amass as many points as possible – certainly more than a friend could manage.

The game wasn't the title that Chuck had initially intended on creating for the Lynx, however. "I had been working on a tank game of my own design for the Lynx," he explains. "I was trying to show off the Lynx with a simple polygon engine written by Steven Landrum [one of Epyx's main programmers and the guy behind Summer Games]. This game was supposed to be one of the original games to come out with the Lynx but it turned out it just wasn't going to work, so it was cancelled."

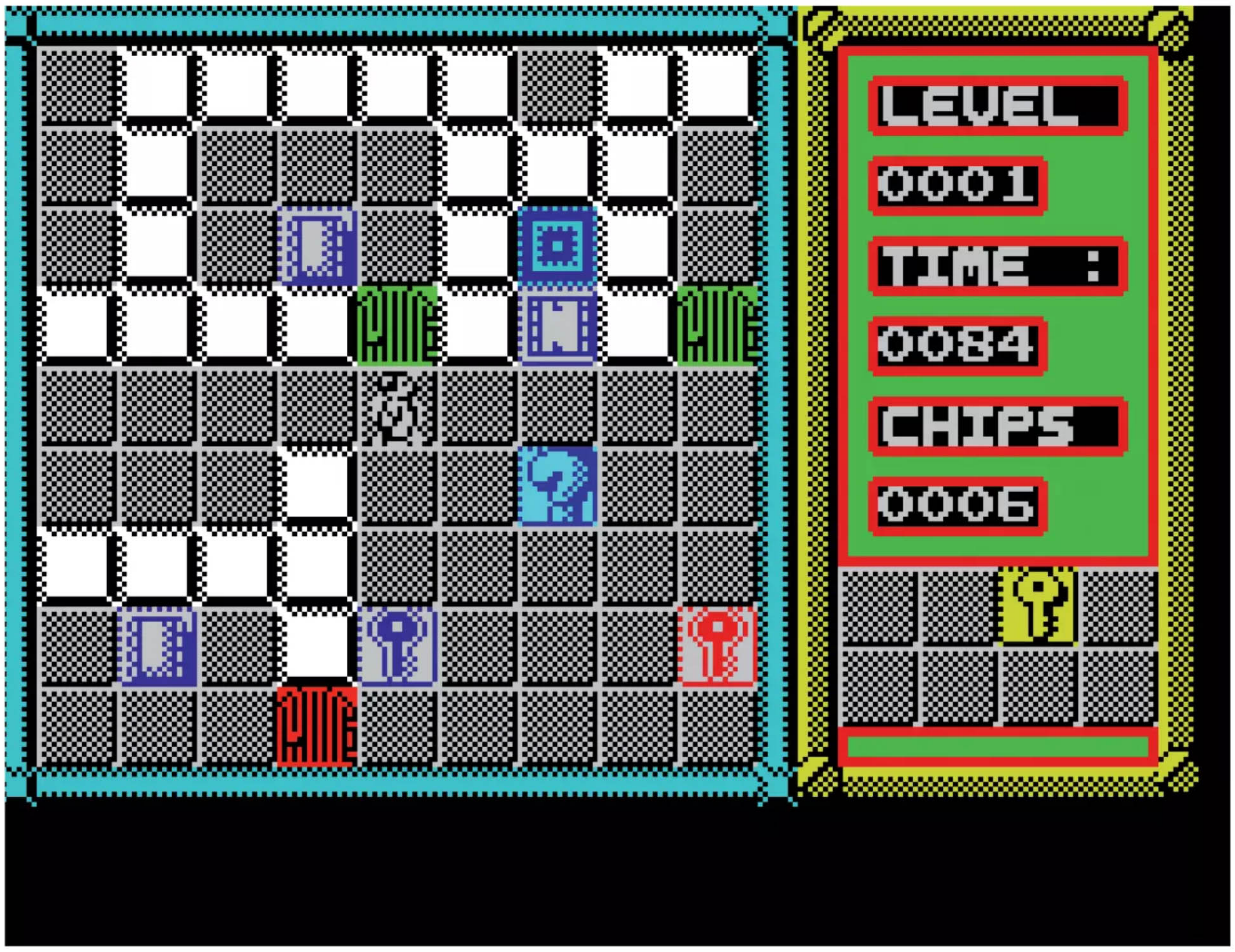
Chip's game changer

With the game canned and with Chuck not having anything else to do, he began to concentrate on thinking up some new game ideas. He knew time was tight and so he had to devise something that was relatively simple, yet enjoyable and eye-catching. He suggested a maze-style game.

"I called it 'Tile World', because it would be based on a tile-type map," comments Chuck. "I wanted to borrow ideas from many games and put them together so they could be combined in countless ways. The only problem was time. I only had ten weeks to complete the project. Luckily, there were many engineers coming off the major development stage of their games, and just going into testing, so I had a pool of level designers."

Initially, however, Chuck could not gain company approval for the game's development so he began by knocking together a simple map and logic code in low-res on the Apple II. Colours defined the tile types. Once he had the game up and running, he was able to show it to

> "IT WAS A LOT OF FUN AND IT ALLOWED THINGS TO BE DONE THAT WE COULD NEVER DO ON THE COMMODORE 64"
>
> CHUCK ON THE BENEFITS OF DEVELOPING FOR THE LYNX

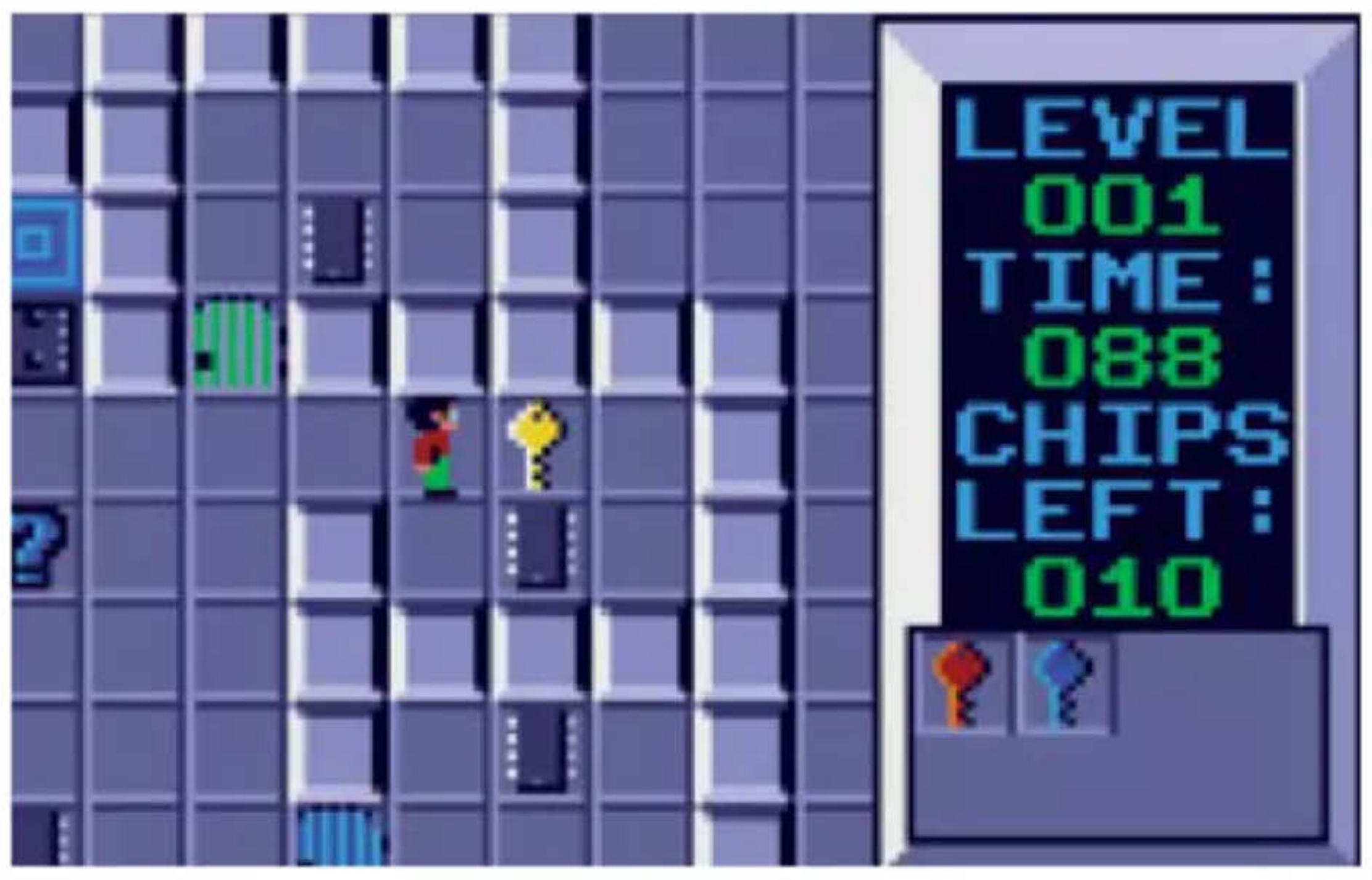


» This is the first level of *Chip's Challenge* on the Spectrum; it actually looks pretty tough for an opening level.

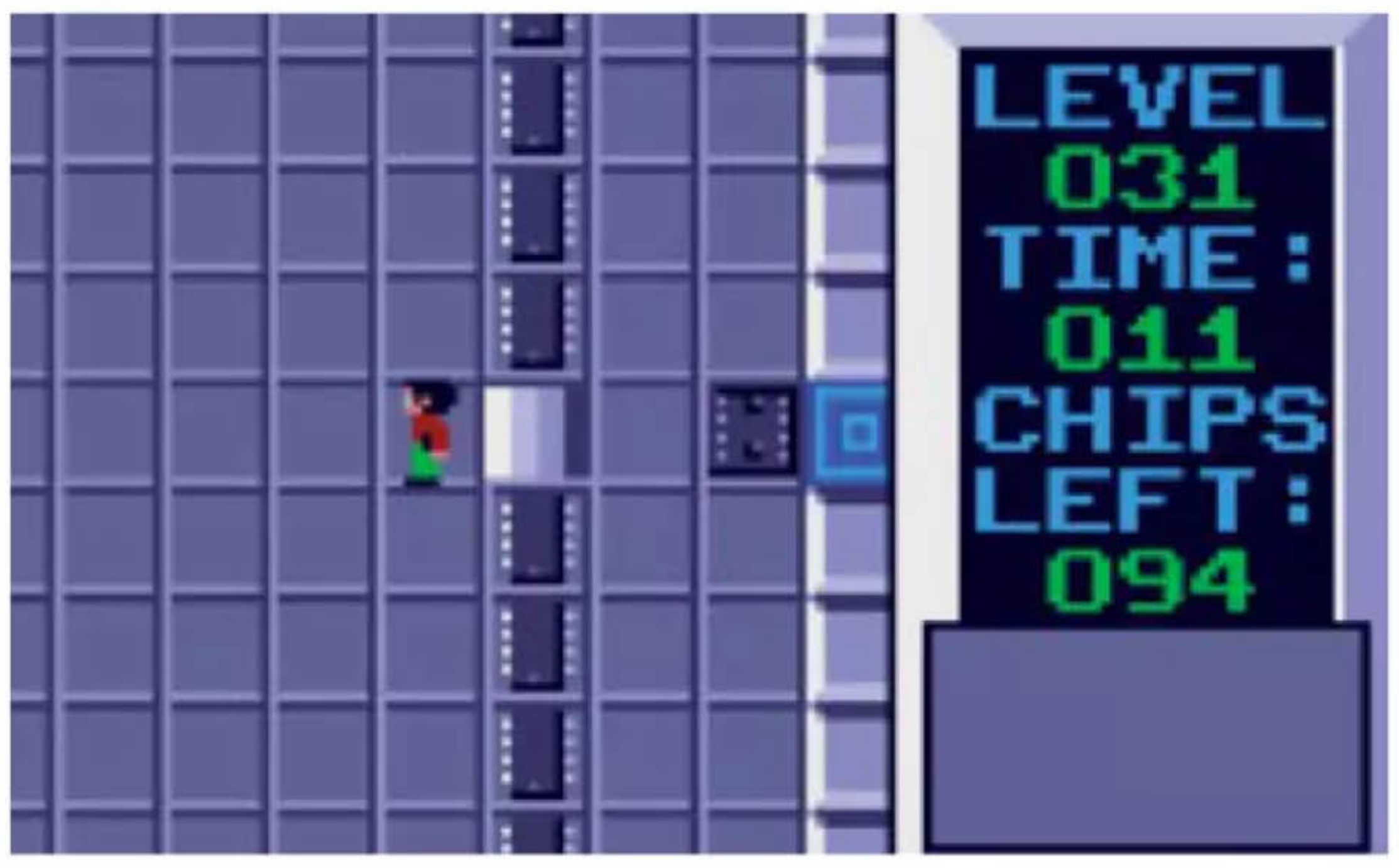
IMPRESSING THE CHIEFS

One of the bosses who gave *Chip's Challenge* the go-ahead was Lynx co-creator Dave Needle. He said he was impressed straight away by the game although he only really saw its potential as the game went through the motions of being made. "*Chip's* was one of the few games that can actually hold my attention," he says. "Other than reading a Clancy novel or designing some electronic thing, I can't seem to do anything for more than 10 minutes without being bored to distraction. But I can play *Chip's* for an hour. I don't think I liked it when it was being developed, it seemed too easy, too predictable but it grew on me. After I had left Epyx, I was called by Sega to help them with the Game Gear. While I was out there with those guys, I spent most of my useless hotel time playing *Chip's*. It was engaging."

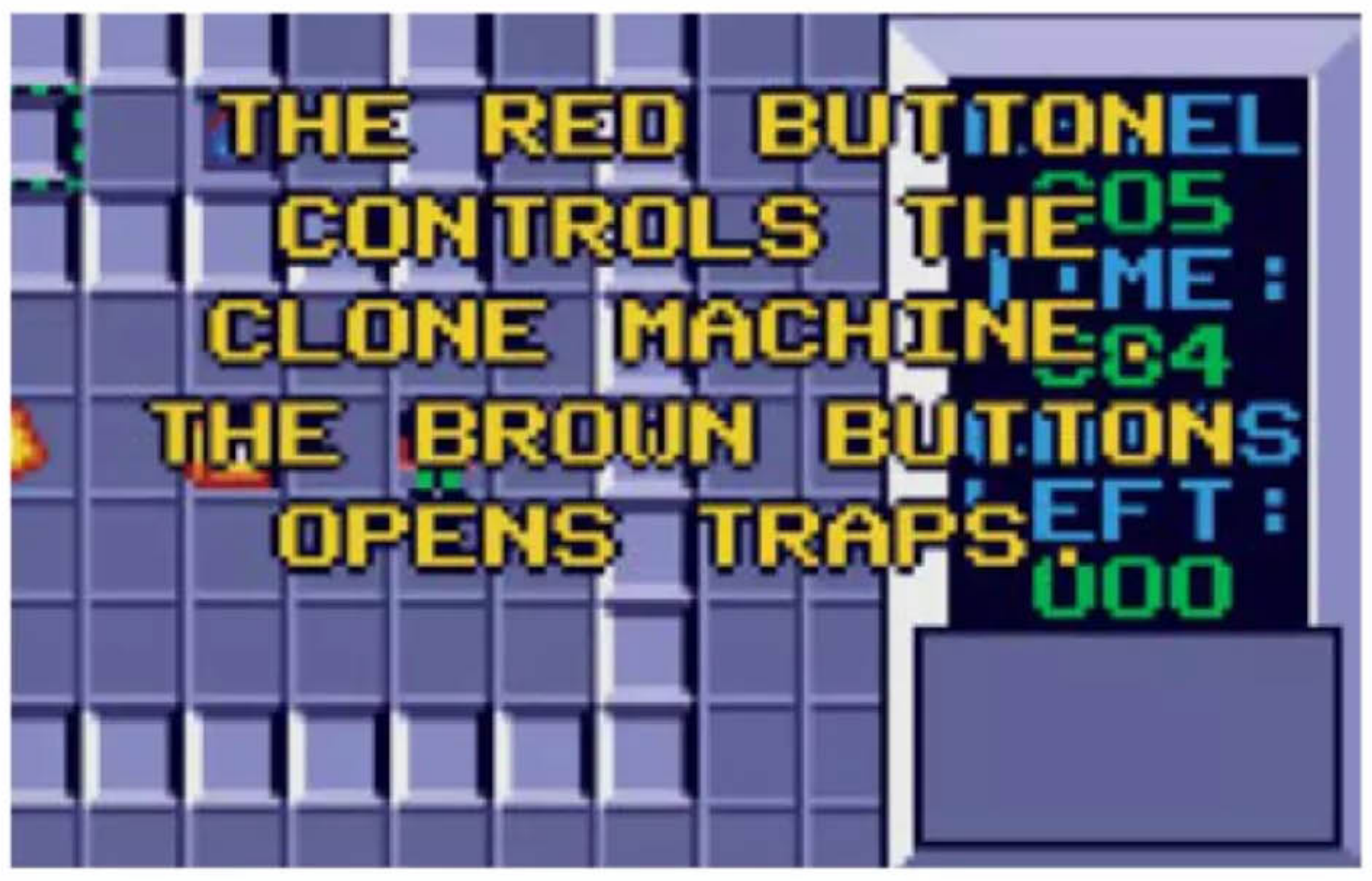
EPYX®



» The first few levels serve as tutorials to help ease you into the game.

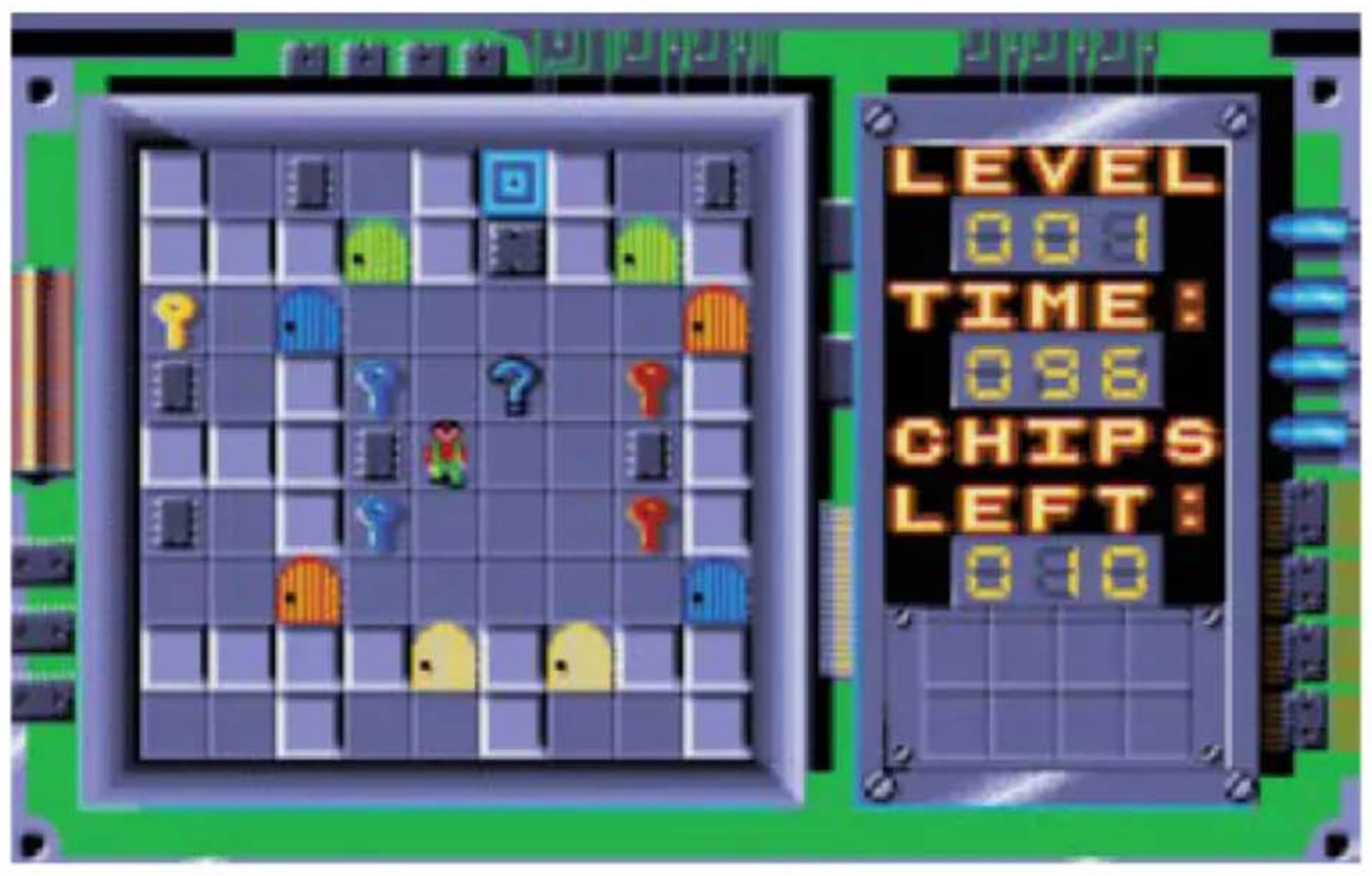


» Hmmm, this level makes us suspicious as it just looks far too easy; there must be more to it?

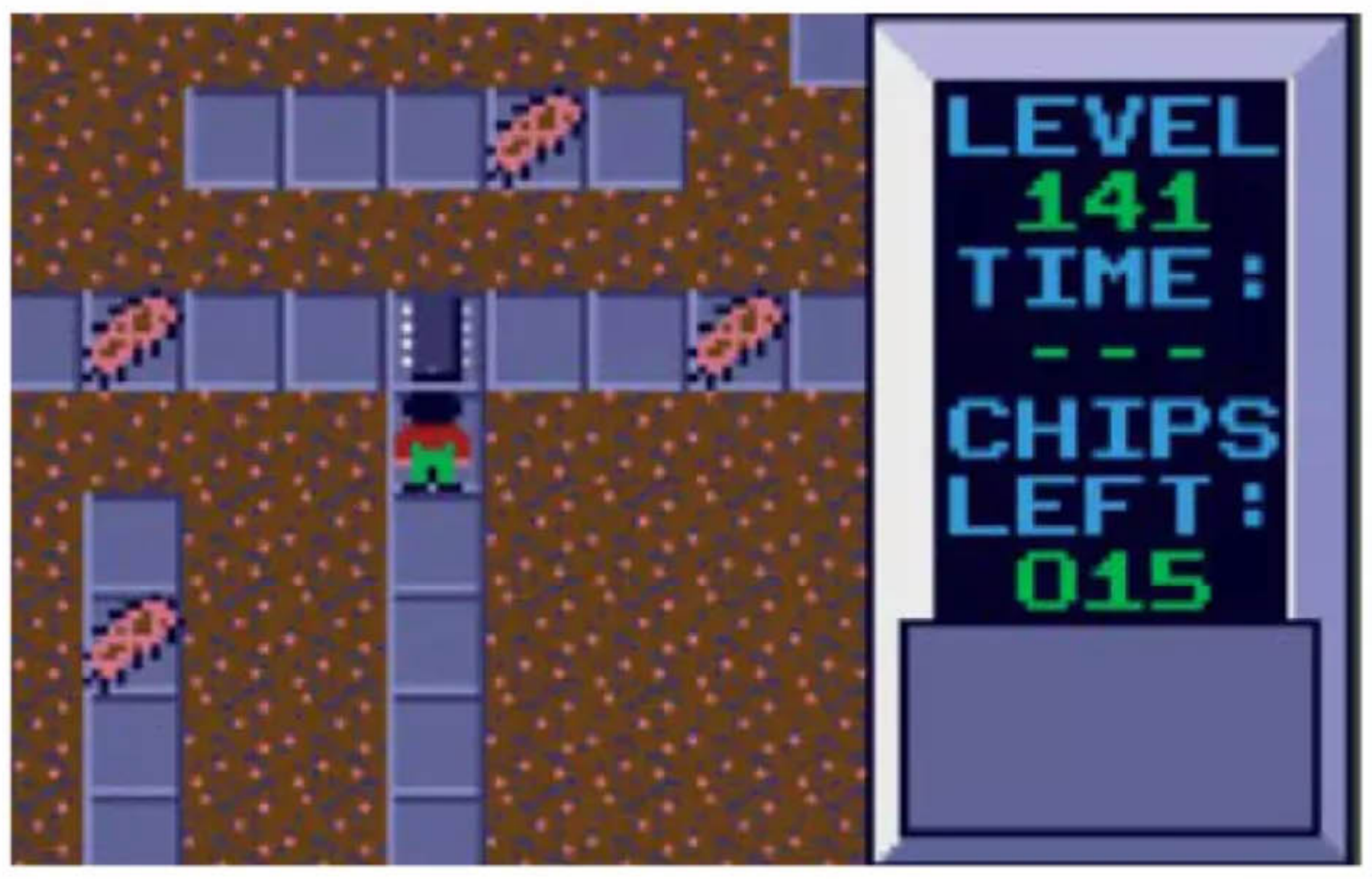


THE RED BUTTON CONTROLS THE CLONE MACHINE THE BROWN BUTTONS OPENS TRAPS

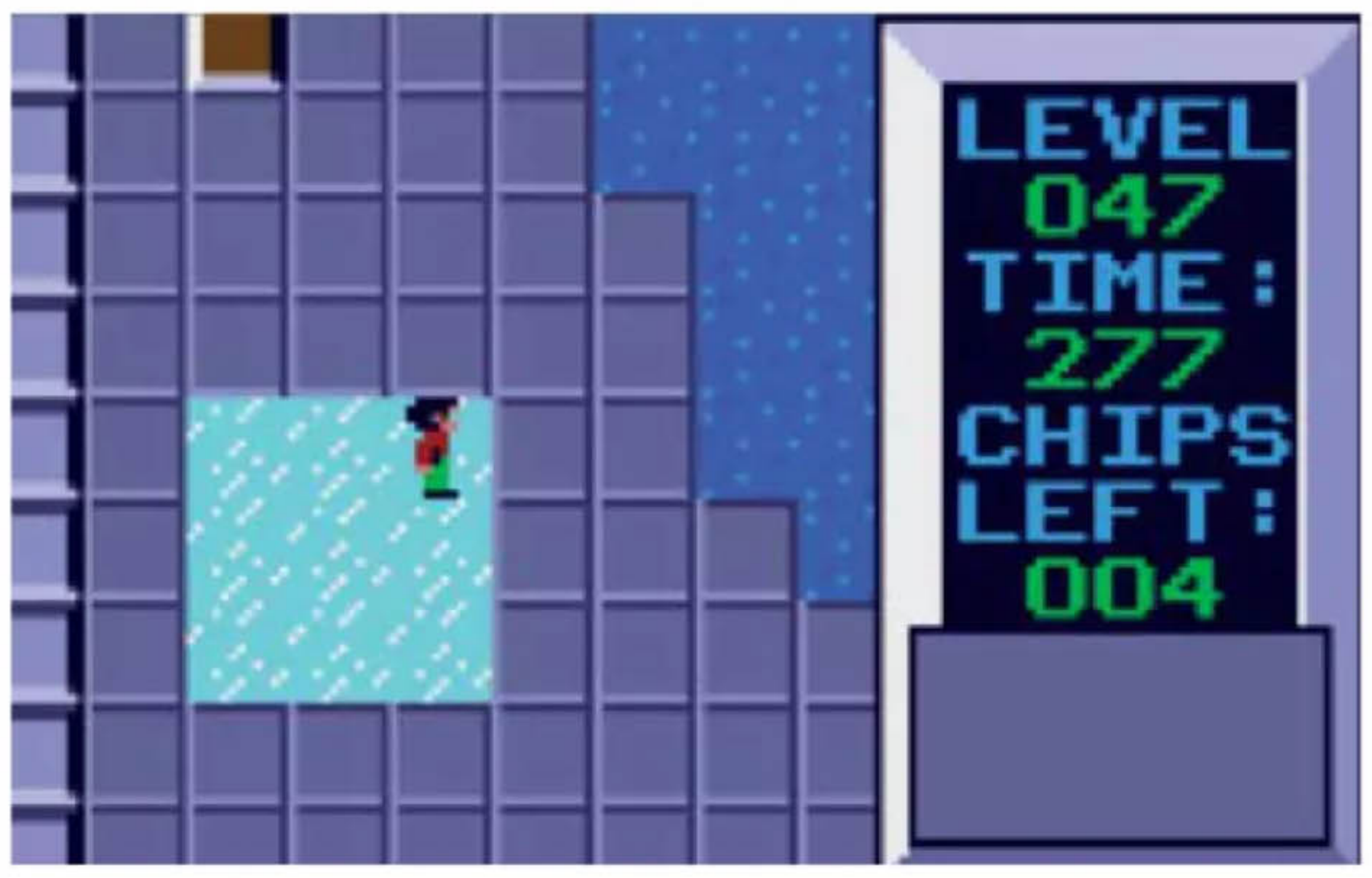
» Walking over question marks on the floor will help you out if you get stuck.



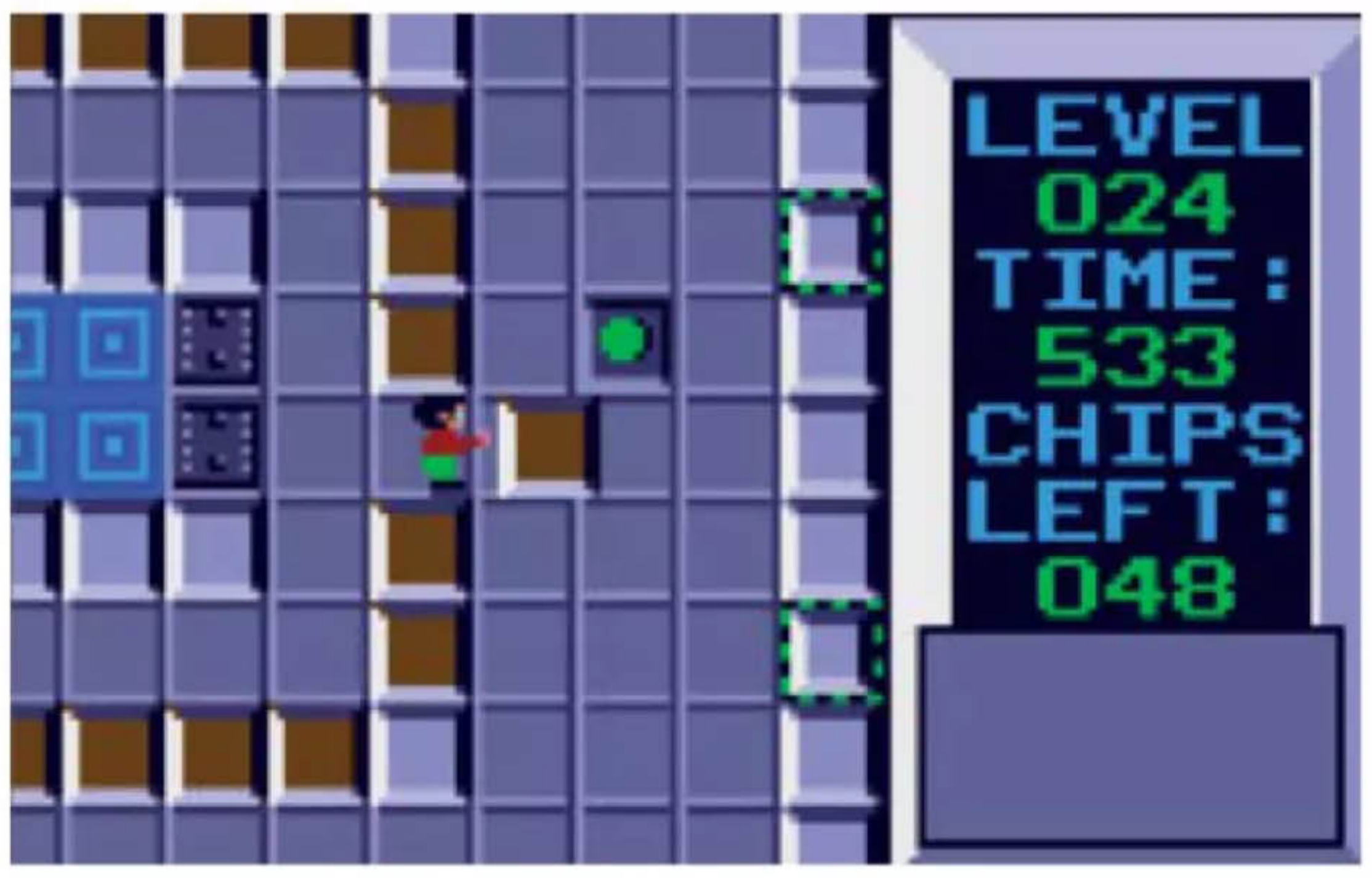
» "So many doors. Which one should I choose?"



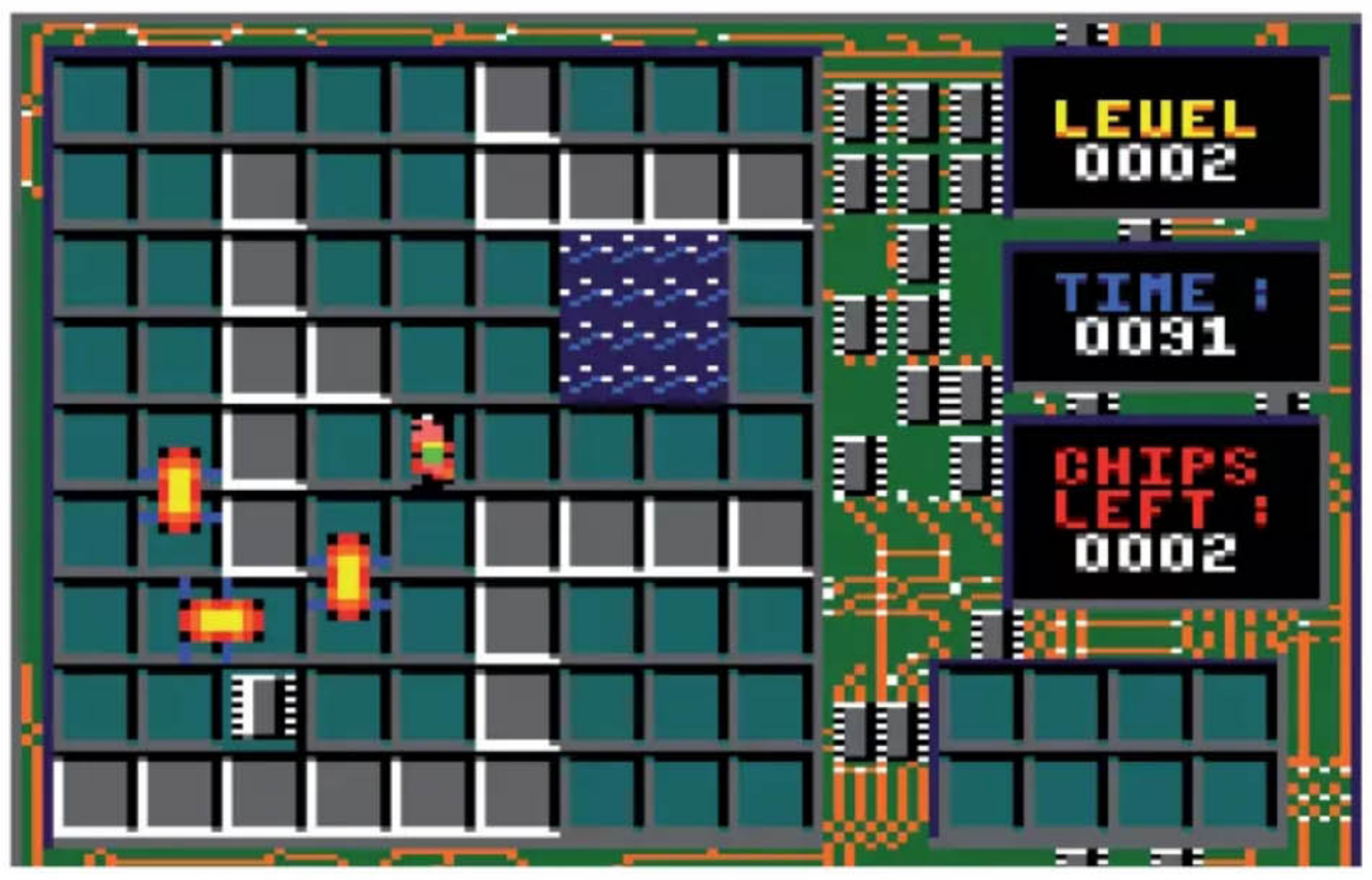
» Guaranteed to get you on edge, there's not a lot of movement on this level.



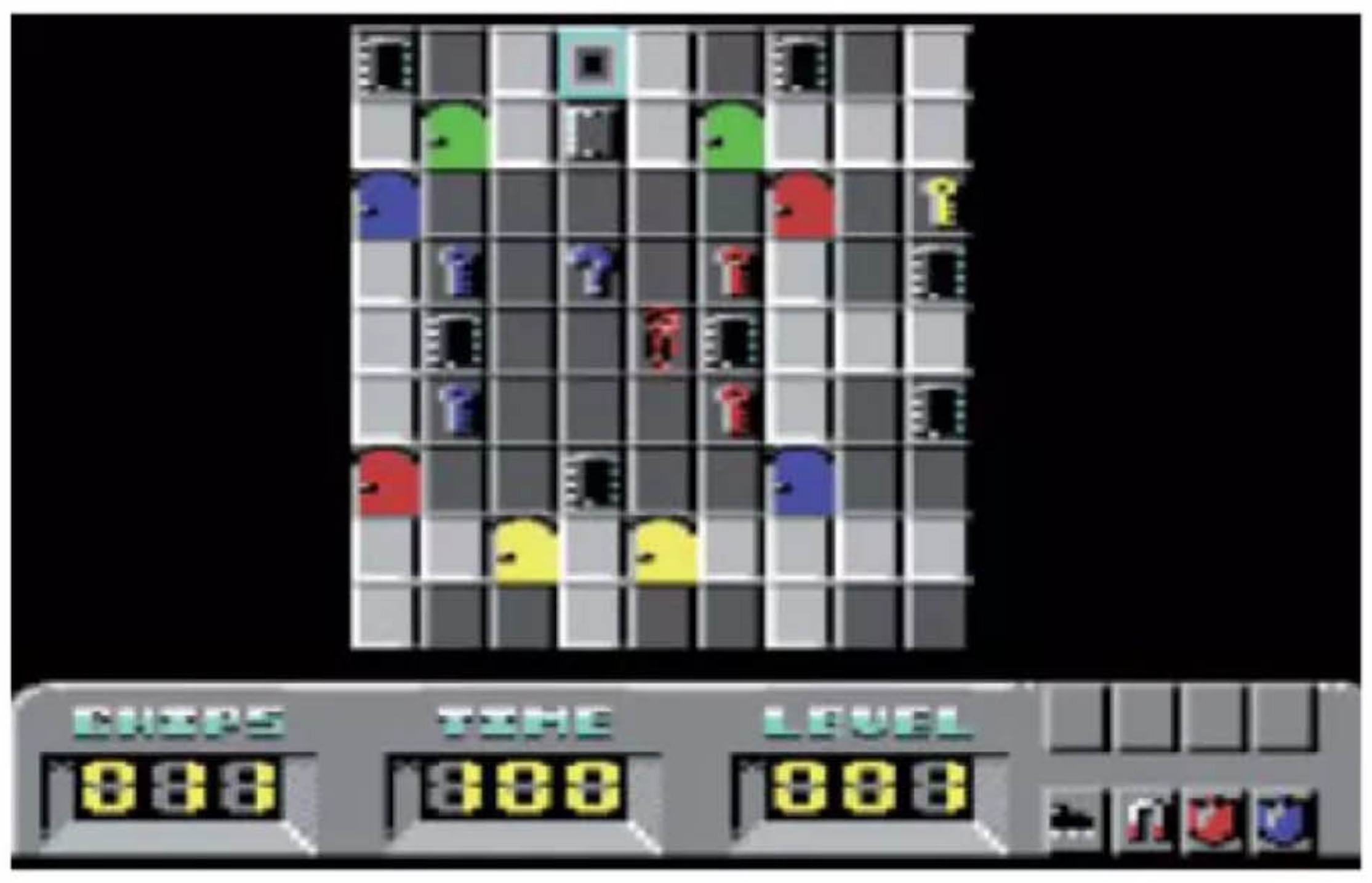
» You skid on the ice and you need to push blocks on to the water.



» The pushing blocks element were inspired by *Sokoban*.



» The game was ported to many computers, including the 8-bit CPC.



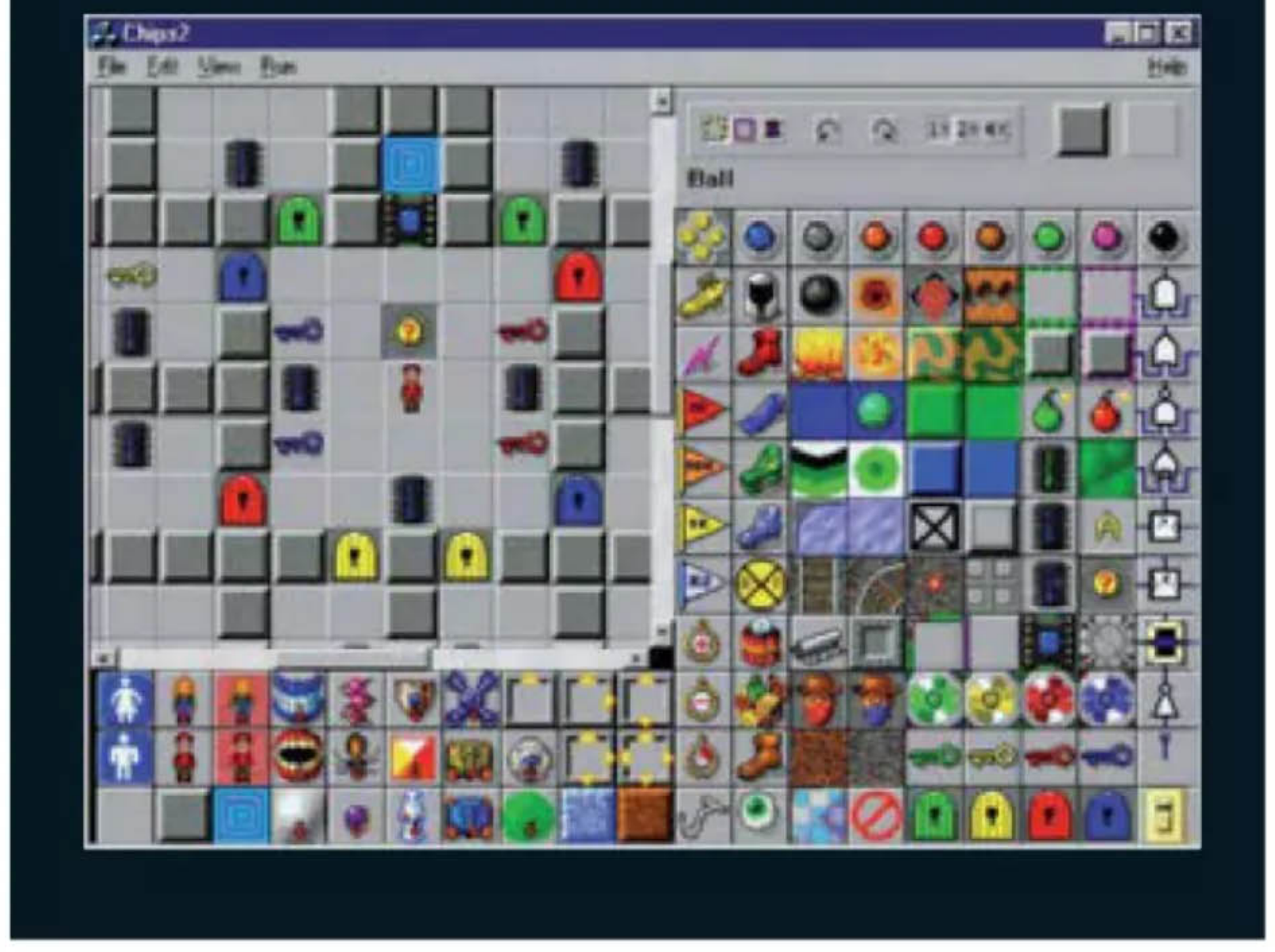
» Chip in a confusing-looking situation.

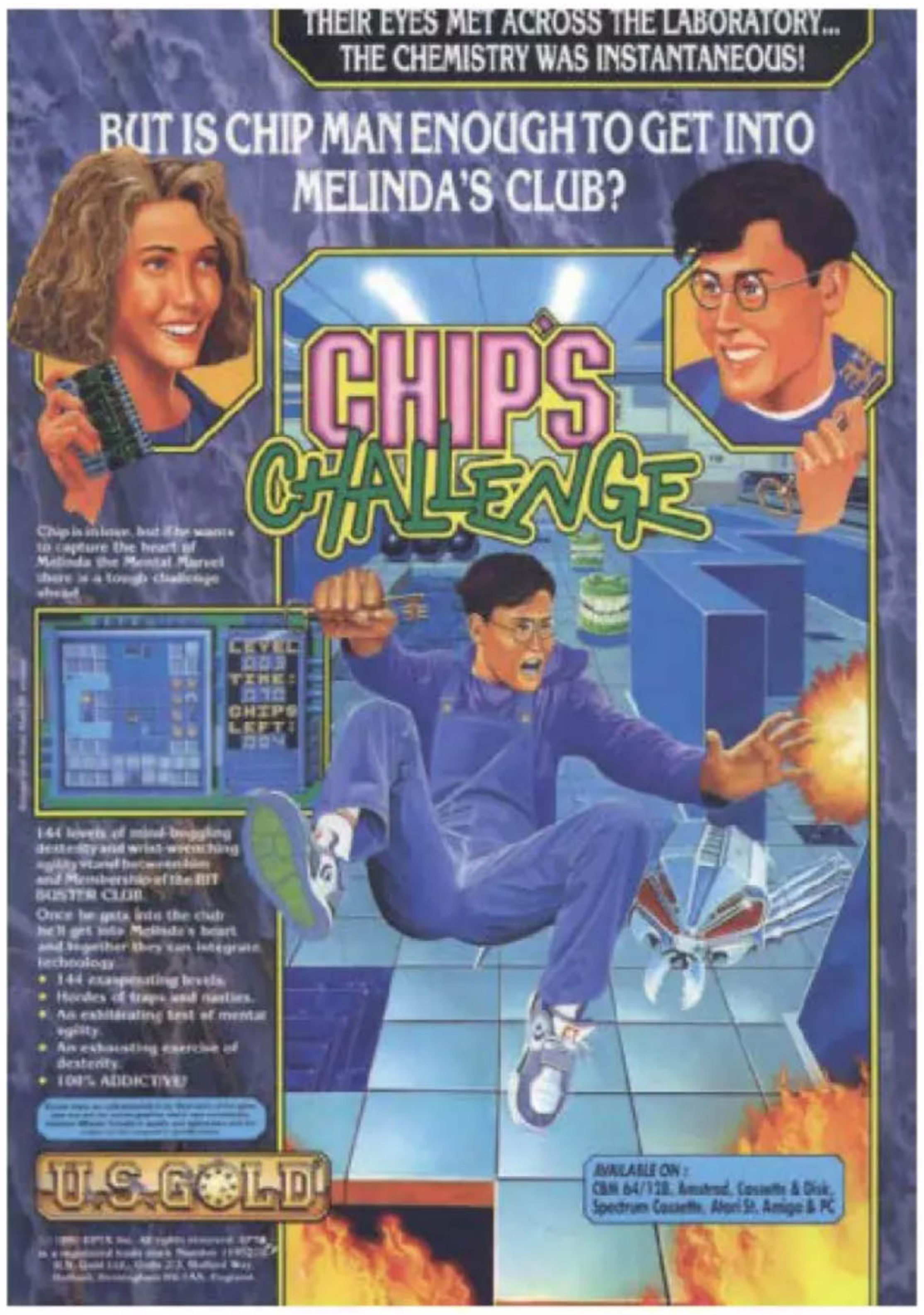
MORE CHIPS?

Although Chuck Sommerville has has many screenshots for *Chip's Challenge 2*, he refused to actually share them with us. To do so, he explains, would only stoke the fires and encourage people to call for its release once again.

"I try to downplay *CC2*," he says. "It puts me in a difficult position because I have just put it behind me." I spent about two years working on *CC2* with the agreement that the company that held the rights to the first game would work with me to get it published," he adds. "After I finished, they were not very helpful. But they also would not let me release it on my own. I spent a couple years really upset about it. For several years after that, about once a year, someone would approach me with some hopeful way to get the game to market, but each one eventually faded out. I finally decided to not be concerned about it any more, and just put it behind me."

Interestingly, Chuck recently released on iOS game called *Chuck's Challenge*.




THEIR EYES MET ACROSS THE LABORATORY...
THE CHEMISTRY WAS INSTANTANEOUS!
BUT IS CHIP MAN ENOUGH TO GET INTO MELINDA'S CLUB?
CHIP'S CHALLENGE
U.S. GOLD

» The very cheesy looking advert for Chip's Challenge. Are you man enough to help Chip get into Melinda's exclusive club?

> "I HAD EACH LEVEL TESTED TO MAKE SURE THAT IT WAS POSSIBLE TO COMPLETE AND I ALSO HAD EACH RATED FOR FUN AND DIFFICULTY"
>
> CHUCK ON THE TESTING PROCESS

his bosses at Epyx who decided it would be a fun title. It would also add to the roster of games that Epyx was keen to make available for its handheld. "The most important part was getting the go-ahead from Epyx," he says. "It was hectic, but I think it went smoothly." Chuck's team got to work. They used a paint program on the Amiga to design the maps. By putting the art tool into grid mode, and putting little bar codes in the corners of the tiles, the saved artwork became the map file.

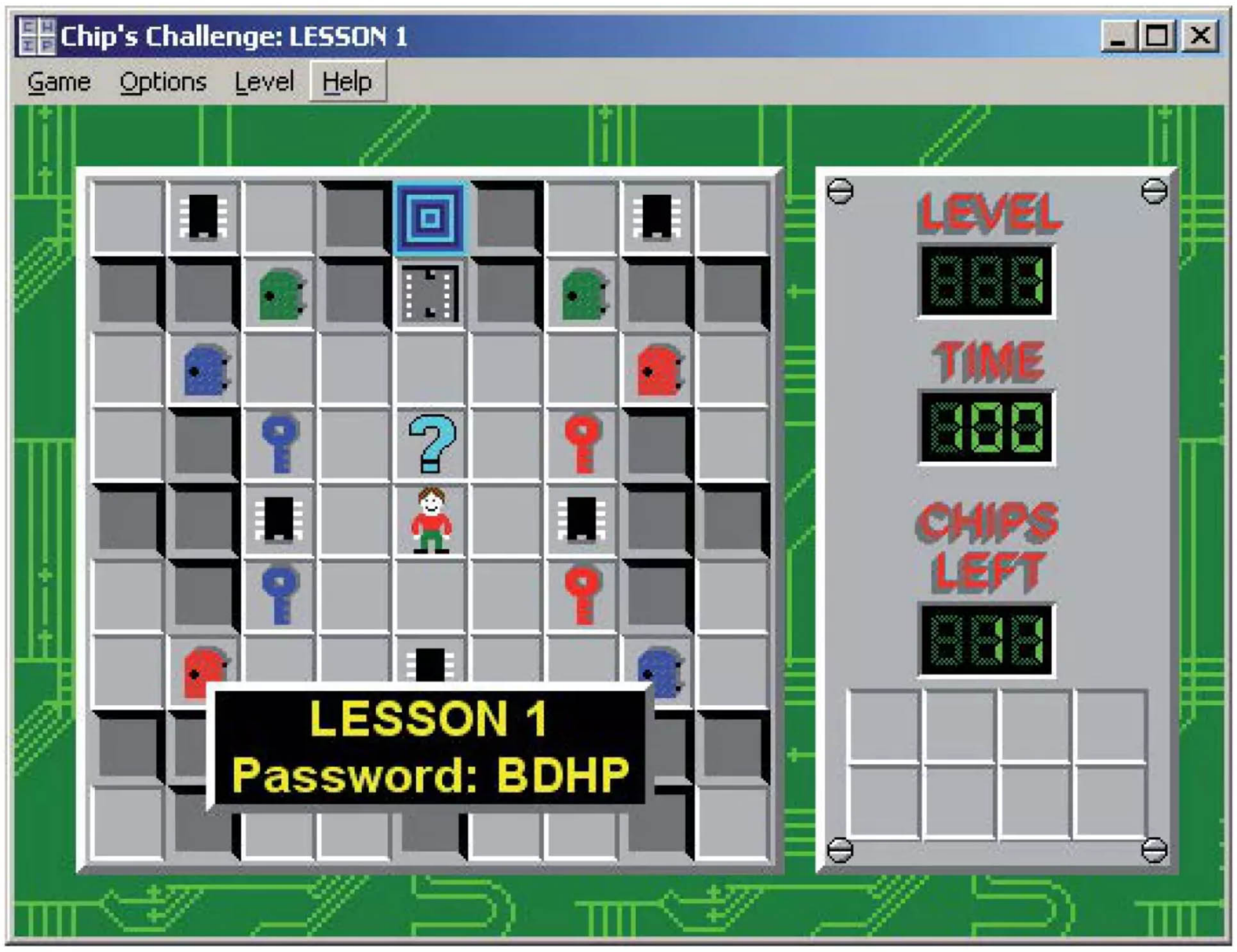
The personal touch

"We had a software tool that could read the codes from the art to build the maps," says Chuck. "I also hired Bill Darrah, who I knew to be a prolific puzzle designer, to design levels." Bill was one of Chuck's close friends and he was able to convey to him the results he required from his game. This partnership was so successful that, between them, they knocked out two-thirds of the levels.

"I continued to add new gaming elements as we went along," explains Chuck about the ever-changing design. "In the end, I designed about a third of the levels, Bill designed about a third and the rest were designed by other engineers and testers."

Although the original intention had been to make a different type of game entirely, Chuck was nevertheless pleased to be able to work on a puzzle game and *Chip's Challenge* remains the game that he loves the most. "I wrote Chip's Challenge for myself," he proudly tells us about the obvious labour of love. "It was the game I always wanted to play. I had spent several years writing games designed by others, games that were chasing themes the marketing department thought they could sell. I wanted to make a game that was all about gameplay and this was it."

Chuck says he has always liked maze games. "Even back in high school, I had this idea for a maze that could change when you stepped on certain buttons, making the maze much more complicated than it looked," he laughs. "But it was Boulder Dash and Emerald Mine that really showed me that a game like this could work."



LESSON 1
Password: BDHP

» The game made it on to the PC too – but Chuck Sommerville wasn't 100 per cent happy with the final version.

DEVELOPER HIGHLIGHTS

Impossible Mission
Systems: C64, BBC, Spectrum, CPC, Master System, Acorn Electron
Year: 1984

California Games
Systems: Amiga, CPC, Apple II, 2600, Lynx, Atari ST, C64, DOS, MSX, NES, Mega Drive, Master System, Spectrum
Year: 1987

Electrocop (pictured)
System: Lynx
Year: 1989

IME LEFT: 59:29:3
SCORE: 750
LEVEL 1

Some of those influences are obvious if you're prepared to look at *Chip's Challenge's* gameplay. The block-pushing element is similar to Sokoban, for instance, and is used to clear paths and allow Chip to navigate around the playing area. To encourage the pick-up-and-play nature of the game, the first eight lessons were deliberately made easy and were, in essence, for tutorial purposes.

Yet even though it was a game Chuck had always wanted to create, he didn't have the whole concept planned out in his head from start to finish. He created it from his heart, discussed gaming elements with friends and took on board new perspectives. "I took each idea, and tweaked it to fit in with the rest," he recalls about the game's process.

> "IT WAS BOULDER DASH AND EMERALD MINE THAT REALLY SHOWED ME THAT A GAME LIKE THIS COULD WORK"
>
> CHUCK SOMMERVILLE

An isometric viewpoint was discarded almost immediately – "I also decided to get rid of any gravity component and stick with a straight top view" – and the team had no problems getting the game finished.

"It was well timed," Chuck remembers. "About this period, the testing department was mostly done with the other Lynx games, so I had access to a small army of testers. I had each level tested to make sure that it was possible to complete and I also had each rated for fun and difficulty. The final stage was left to me. Based on the ratings, and my own judgement, I had to pick which levels and what order to put them in."

The game proved to be a great success – "Let's be clear though, it was never intended to be a Tetris beater" – and quickly became one of the Lynx's killer apps, something Atari's plucky little console desperately needed. But it wasn't long before the title was ported to other machines. In fact, it was translated to virtually every machine available at that time, including the Commodore 64 and the PC.

The PC version of *Chip's Challenge* was converted by a games team at Microsoft, headed by Chuck's friend Tony Garcia. But Chuck wasn't. "It's not a game I care too much for. Instead of sliding across in quarter-square increments, the monsters jump from square to square and that makes it harder to work out which direction they are going," he explains. The PC version also happened to have a save feature while the Lynx used passwords (entering MAND would give the player access to a handy Mandelbrot set and a Julia set fractal plotter).

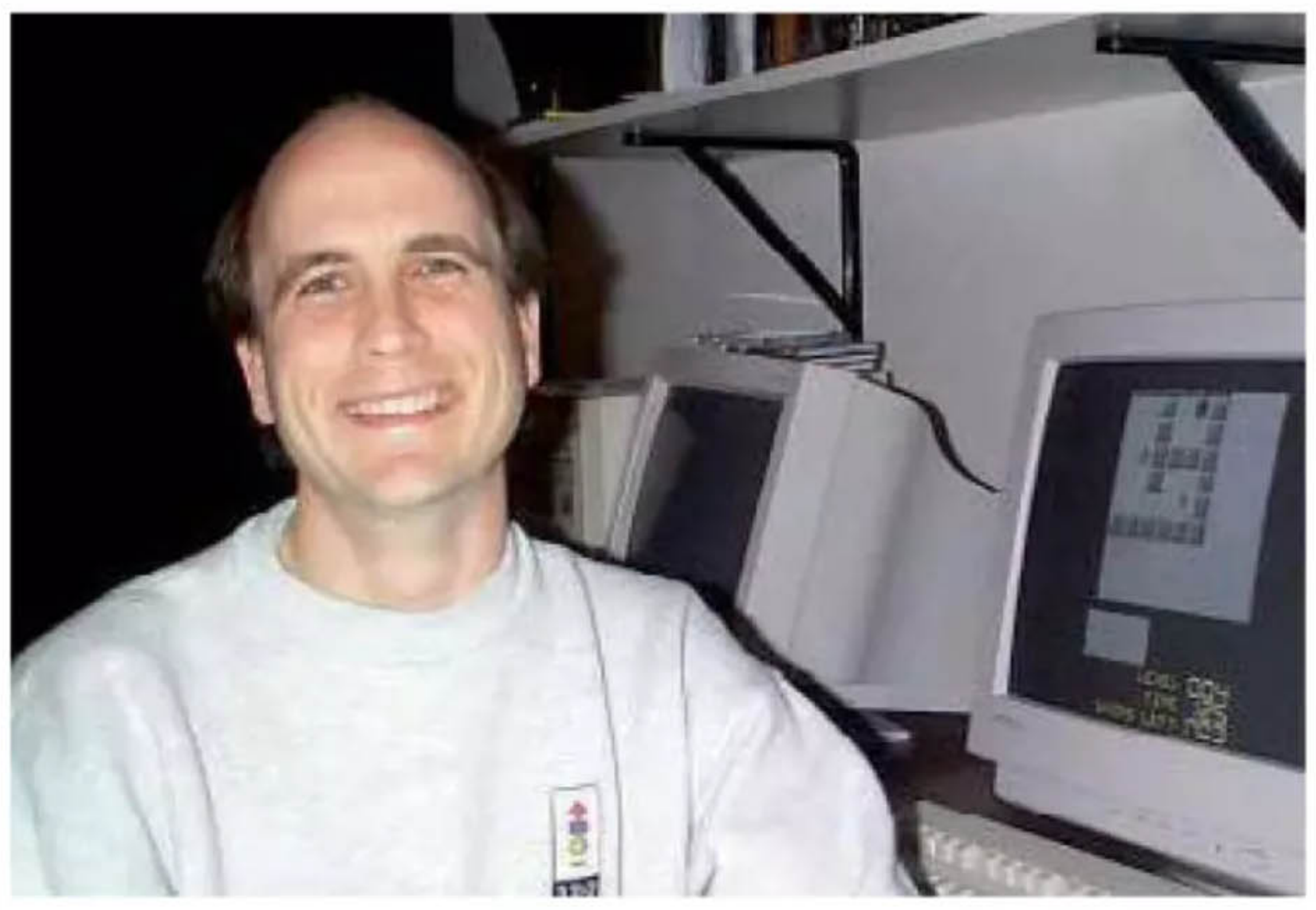
But the fun doesn't stop there. Although *Chip's Challenge 2* is, sadly, not likely to ever see the light of day, the game still retains its many fans. Some of these have been developing their own levels and even Chuck gets involved by dishing out encouragement. One of the fruits of their labour is the *Chip's Challenge Level Pack 2* that has another set of 149 levels to play and there is also a tool called Chip Edit, which allows for users to create their own levels.

Interestingly, Chuck himself coded a new iOS game called *Chuck's Challenge*, which is as close to a *Chip's Challenge* sequel as we're ever likely to get.

"I'm pleased the game is still being played and that people still enjoy it," says Chuck. "It's amazing, given that it only took ten weeks to make. It was unheard of even back then to knock out a game in such a small amount of time. But we did that and created what some people say is a classic, which is wonderful."

ATARI
LYNX
TM
CHIP'S CHALLENGE
TM and © 1989, Epyx, Inc. © 1989, Atari Corporation.
All rights reserved. PA2028 Made in China.

» The Atari Lynx *Chip's Challenge* game cartridge. That big set of gnashers looks pretty scary.



» *Chip's Challenge's* creator Chuck Sommerville, looking rightly pleased with himself. And who could blame him?

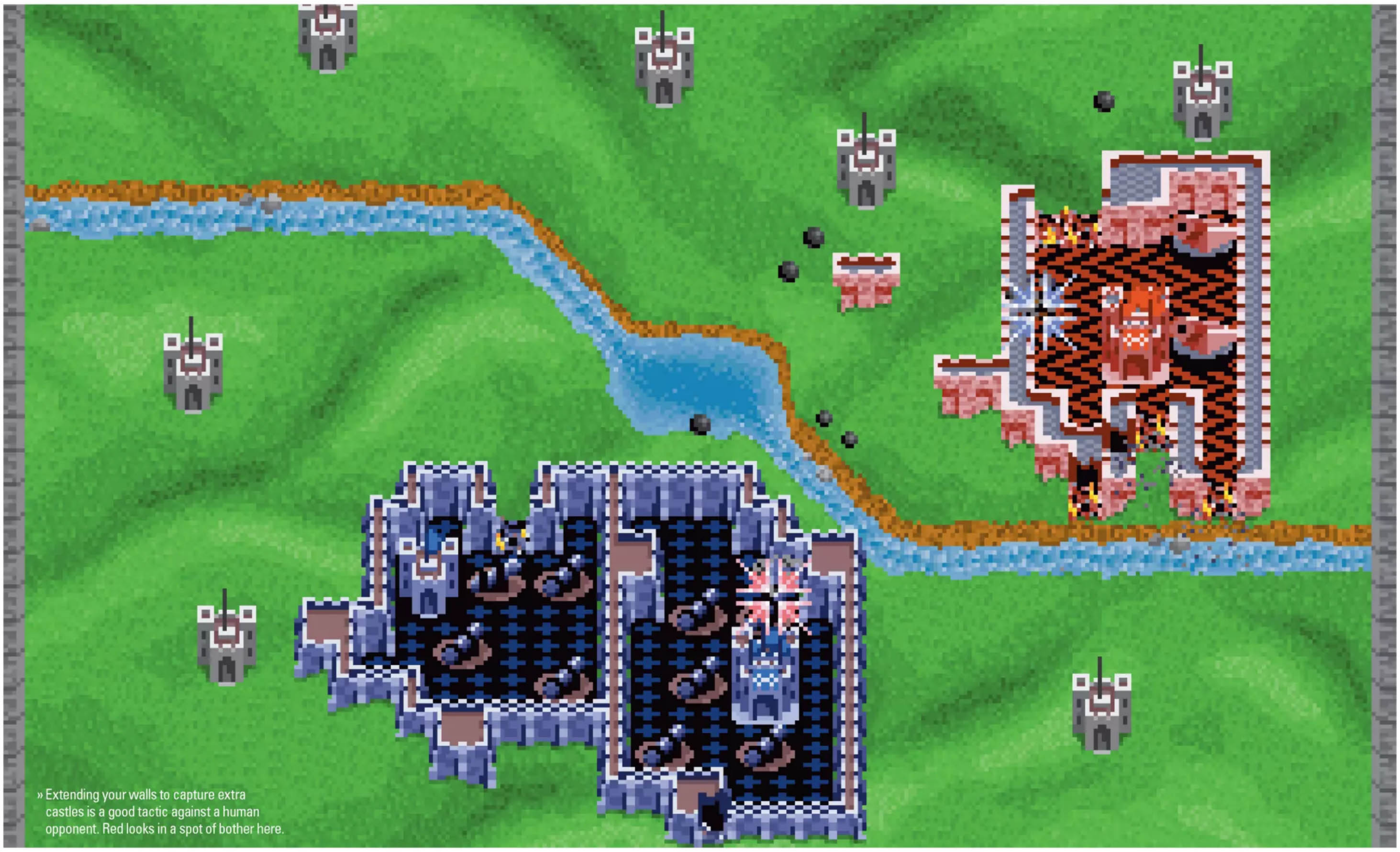
THE MAKING OF RAMPART

ATARI GAMES' HARD DRIVIN' SPED UP THE CHARTS AND USHERED IN A GOLDEN AGE OF POLYGON-FUELLED RACERS. RICK MONCRIEF AND MAX BEHENSKY TELL RORY MILNE HOW THEIR PIONEERING SIMULATOR TOOK POLE POSITION AT THE ARCADES

Billed as 'a game of strategy and skill', Rampart is one of the most unusual of Atari's many arcade titles; a dash of Missile Command mixed with the jigsaw-puzzle building elements of Tetris, in a medieval castle setting. Designed as a multiplayer game for up to three, it's a simple, engaging premise. Take charge of a fort, populate it with cannons and then attempt to blow your opponent's castle into tiny splinters. Between rounds, plug any gaps in your defences with tetrominos before the timer expires, for the next bout of madness.

As a multiplayer game Rampart harks back to the Atari's classic Warlords in terms of straightforward, pick-up-and play appeal, with a surprising amount of depth beneath its admittedly minimalist facade. For the game's designers, John Salwitz and Dave Ralston, it was a project that derived from putting Tetris-style building blocks into an almost abstract game concept.

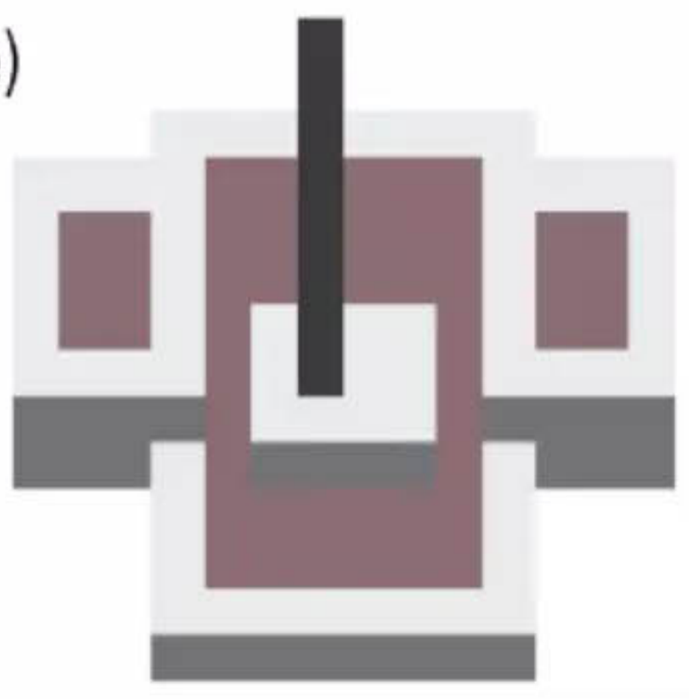
"We really wanted to do a multiplayer competitive game, and of course Tetris was a huge title at that time," remembers John. "Missile Command has always been one of my favorite games and I know Dave is a big fan as well, but I think the idea of putting Tetris pieces in was later, an earlier influence, in particular for me was a game called Cathedral, which is a board game in which you trap territories on a board. It's really a wonderful game. And it is medieval themed but that's not really the point of it, it was more about Tetris-like pieces slotting together while you try to occupy as much territory as you possibly can. We had good prototype hardware so we were able to do good iterative thinking, so we just played with a bunch of concepts and started coming up with Rampart."

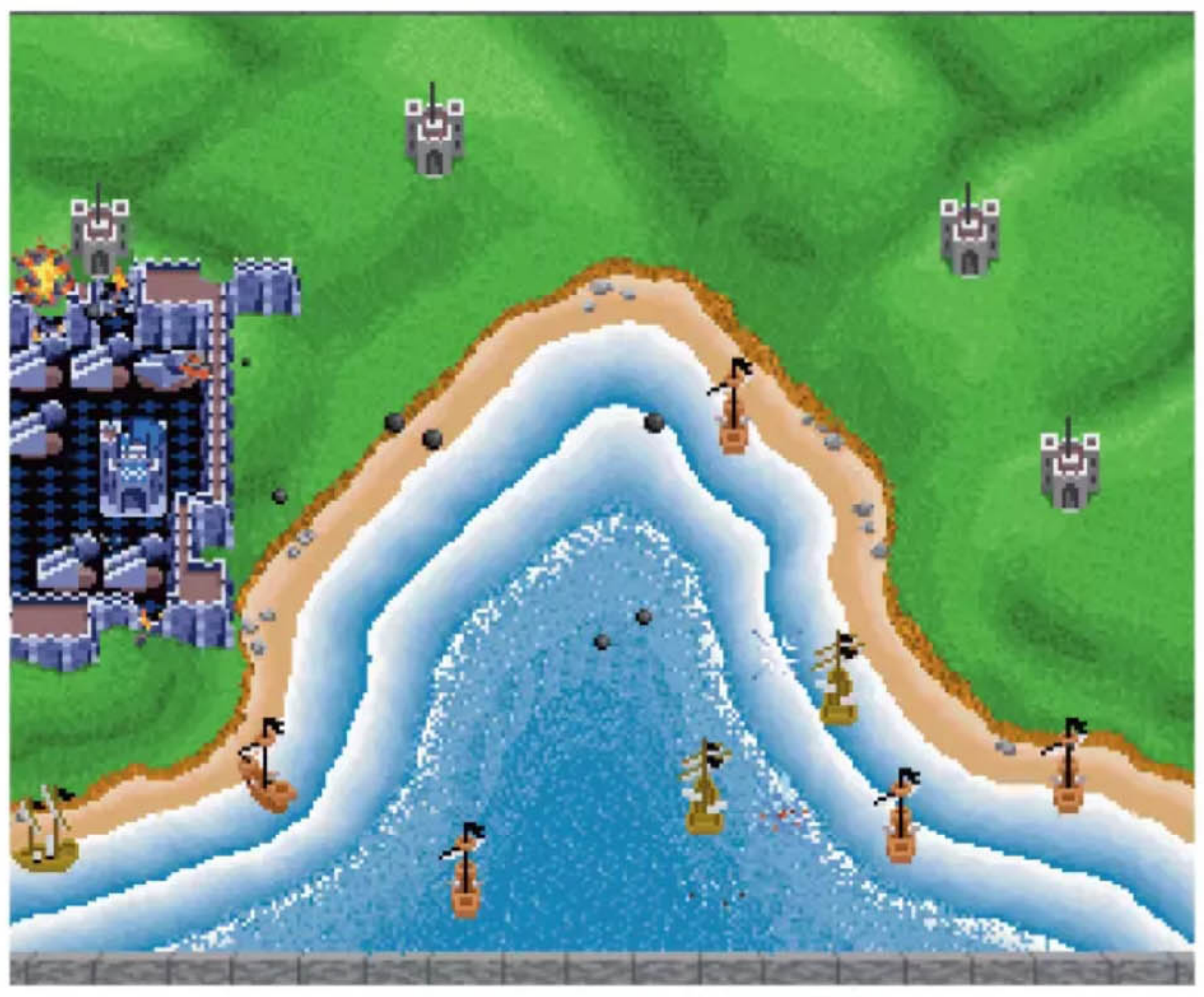


» Extending your walls to capture extra castles is a good tactic against a human opponent. Red looks in a spot of bother here.

IN THE KNOW

- **Publisher:** Atari Games (Arcade) Electronic Arts (Home versions)
- **Developer:** Atari Games
- **Platform:** Various
- **Year released:** 1990
- **Genre:** Action/Strategy





» If you've no friends Rampart offers a single-player mode where you fend off waves of incoming ships.

» Cathedral, the block-building board game which influenced Jaohn and Dave in the creation of Rampart.

Inspired by the Cathedral board game, the idea of puzzle-pieces for castles evolved. "The medieval setting worked in terms of the composition of the pieces," says John. "I'm sure Dave had a whole lot to do with that. Dave has never been much into abstraction, looking at the kind of titles he's done, he's always very rooted in concrete, real things. We could have built the game with just abstract pieces but from a thematic standpoint that didn't hold. The game transforms from pure top-down 2D to a slightly isometric 3D, and the idea of doing that transformation was really appealing to us."

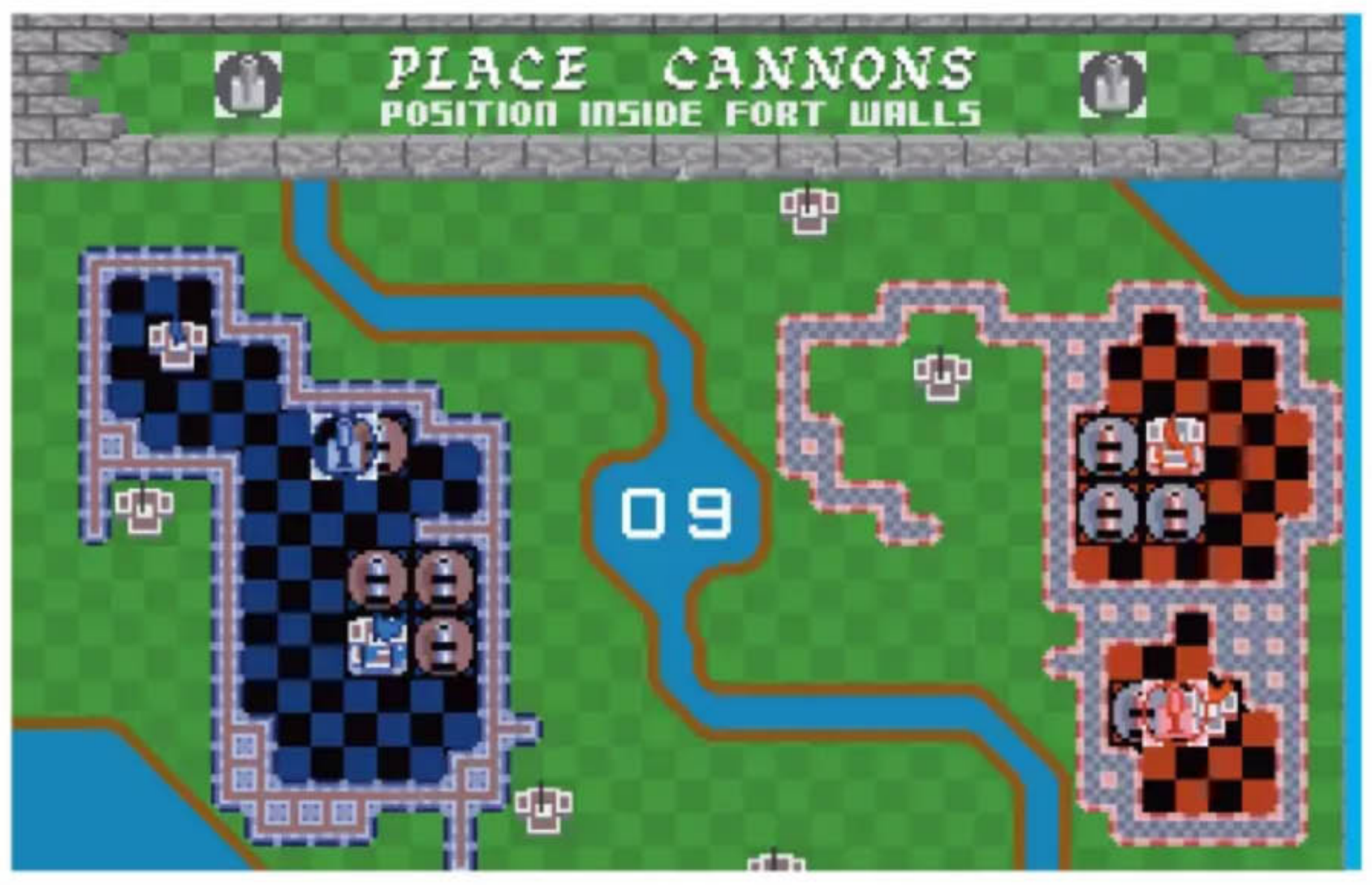
Track record

Surprisingly, and given the pair's track record in creating hits like Paperboy, Atari management green lit the comparatively bizarre design concept for Rampart without resistance. "Dave and I had a lot of luck in the Eighties at Atari," says John, "and we were privileged to be given the opportunity to do a lot of things that we wanted to do. When we pitched the project we knew it was going to be a short development cycle. The whole development cycle for Rampart was around nine months. Paperboy had been about two years, and 720° and the first Cyberball were 18 months. It was not going to be expensive – the hardware was inexpensive bitmap hardware with standard controllers, and it was a relatively small team. We did some things that were reasonably smart in development, early on it was playable so other people could come in and play it, and in fact during its development it was played constantly. Like any good games company, Atari was completely populated by game players so it wasn't a hard pitch."

And as with Missile Command, one memorable aspect of the original arcade game was the Atari trackball controller, which gives the fine control, especially when piecing together pesky wall-plugging blocks. "The other thing that we wanted to do was finally build a trackball game. We did a game called Akka Arrh back in 1981 which was a trackball game that never shipped. And of course Paperboy and 720° weren't trackball. There was a lot of stuff we wanted to do in that period that we finally got to do in Rampart…"

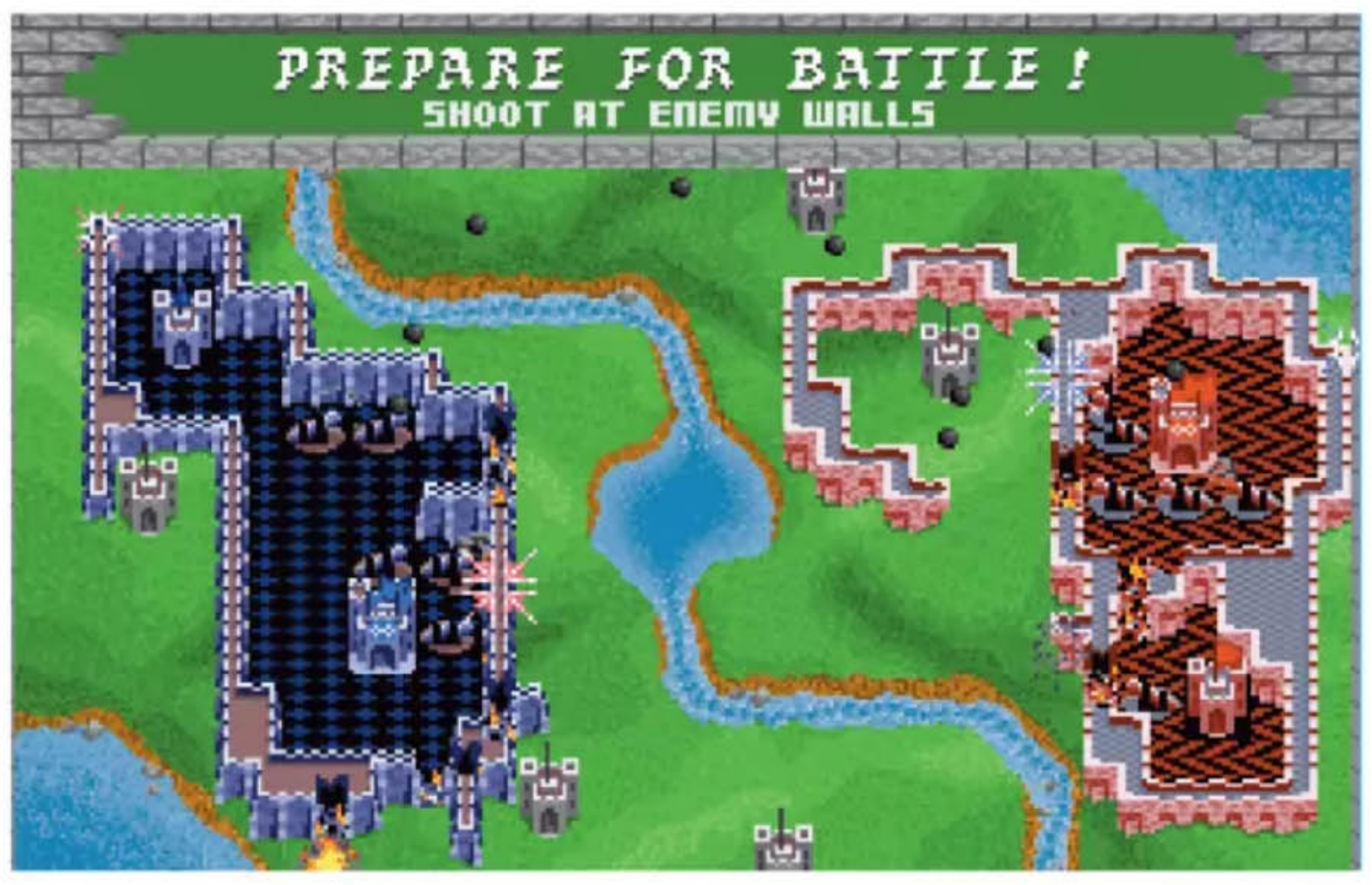
One aspect of the game that John has already hinted at is the collaborative nature of its design, with various other Atari developers play testing and offering feedback

THE PHASES OF RAMPART



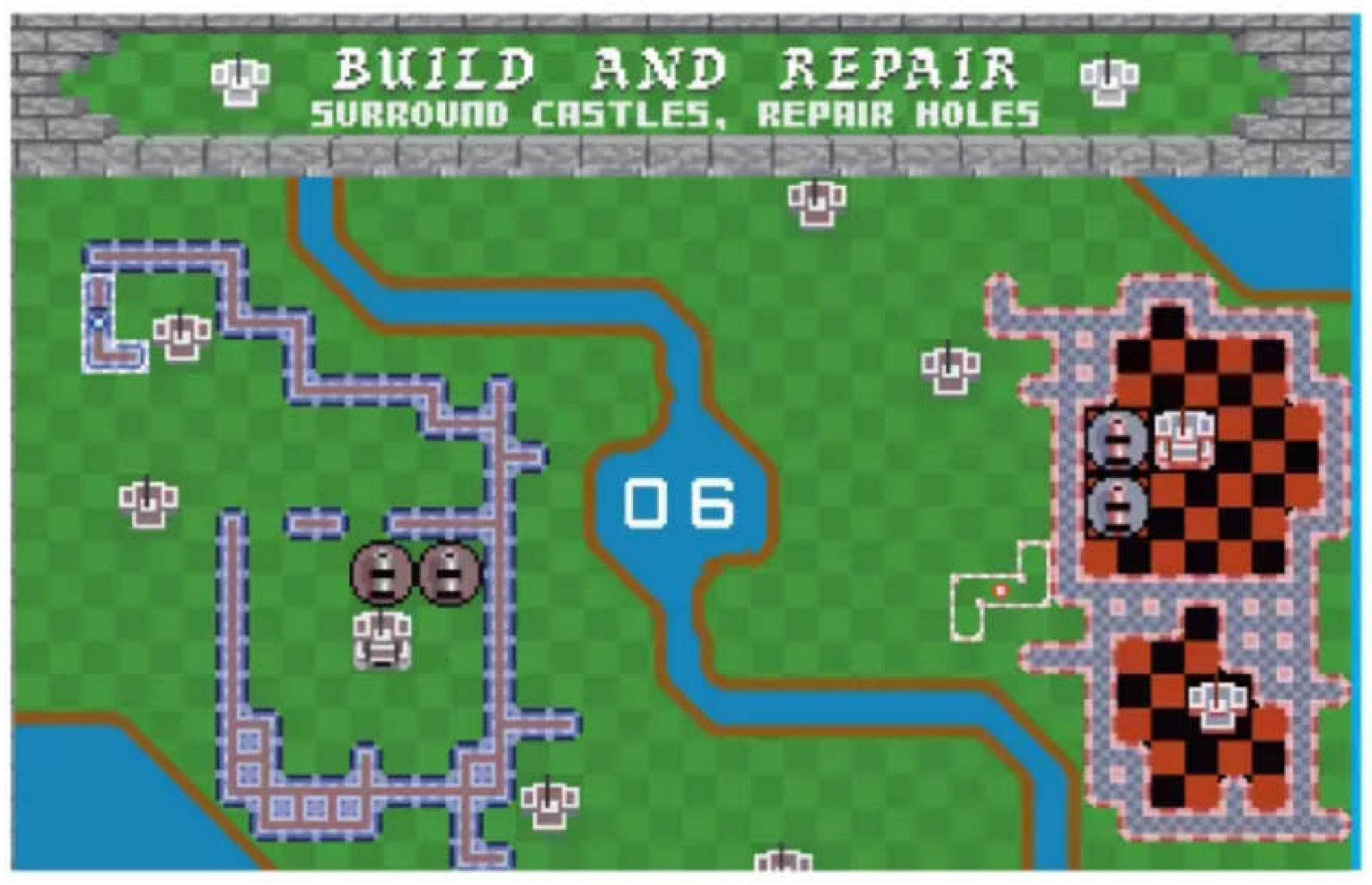
PLACE CANNONS

Choose where to place your cannons, which can only be laid down in the chequered area enclosed by castle walls. Extending your walls to capture other forts on the map will give you more.



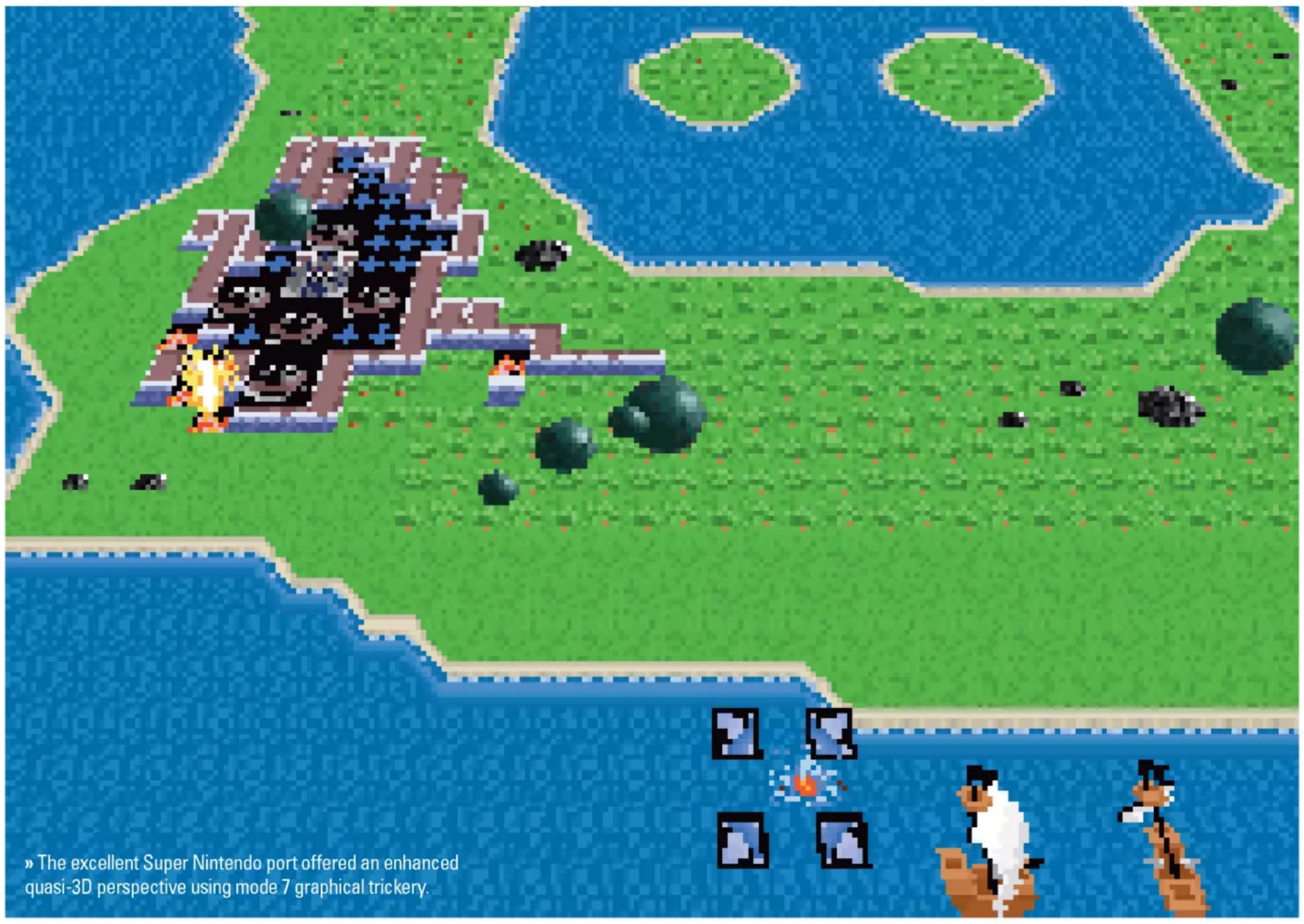
PREPARE FOR BATTLE!

Aim your cursor Missile Command-style and let rip on the enemy fortress. The more cannons you have, the more shots you can fire at any one time, increasing the damage inflicted on the enemy.



BUILD AND REPAIR

Time to survey the damage to your medieval abode… Plug any gaps in your walls with Tetris-style bricks, which can be rotated for an easier fit. Fail to do so before the timer runs and it's game over.


» The excellent Super Nintendo port offered an enhanced quasi-3D perspective using mode 7 graphical trickery.

as it came together. "John and Dave started working on Rampart after we did Klax so they were messing around with Tetris puzzle pieces and in their typical style they came up with a totally unique approach," recalls ex-Atari development manager Mark Pierce. "Peter Lipson, who was another programmer at the time and I started playing it every day at lunch and because we were building walls we became known as the 'wallboys'"

"I really liked Rampart," says Peter. "John and Dave were developing it in the lab right next to mine, so for break-time I would wander in and play for a while. Mark was my major opponent; we worked on trash-talking as much as on our skills and if I recall we could draw an audience. John and Dave were in a creative hot streak, and their games got a lot of play during development."

"We used to laugh at how bizarre the game design was," Mark grins. "The whole puzzle piece building walls and cannon fighting... It's a very interesting game to me, and a lot of fun with a trackball. We were with them the whole time, it was a blast…"

"We would have put five players on there if we could have," says John, confirming how important the multiplayer aspect of the game was to him. "We'd have loved to have done a big top-down cabinet with a ton of players; it would have worked just fine. But we wanted Rampart to be an inexpensive multiplayer game – Cyberball was two screens and fairly expensive, so we were trying to find a way to bring the multiplayer play into a smaller package, and a smaller cabinet. Also, Atari was at that time really focused on trying to figure out how to get things to be cost effective, and of course when you put three players on a controller you get more coin drop."

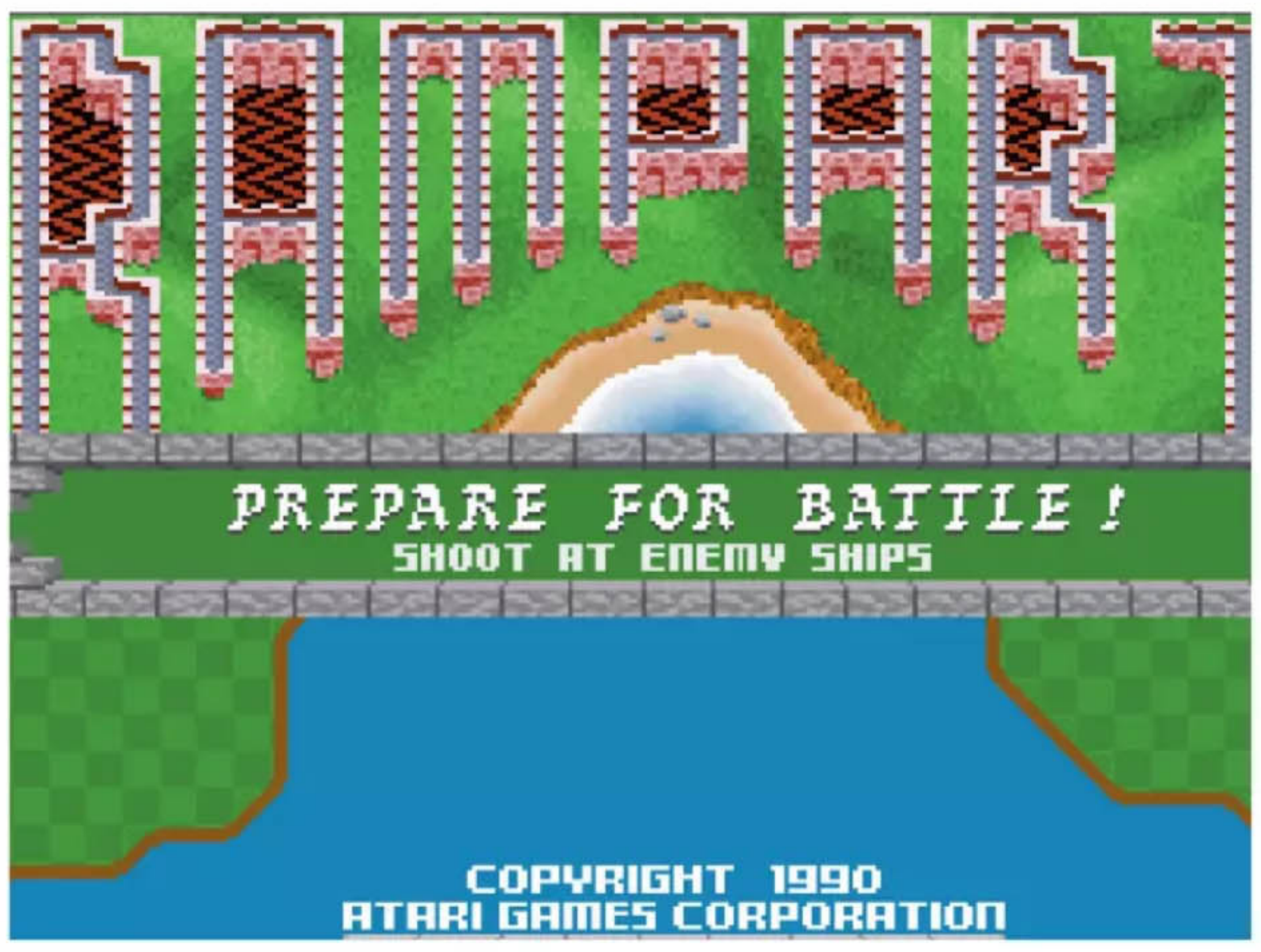
Single survival

"For a while most people were playing it as a multiplayer game but any game in the arcade had to survive as a single player game, so first we figured out the multiplayer game and then we added on the single player game." This mode of the game is considerably different from the multiplayer version; instead of separate castles blasting way at each other players must defend themselves from hordes of incoming ships and later, vicious castle-bashing grunt landing parties.

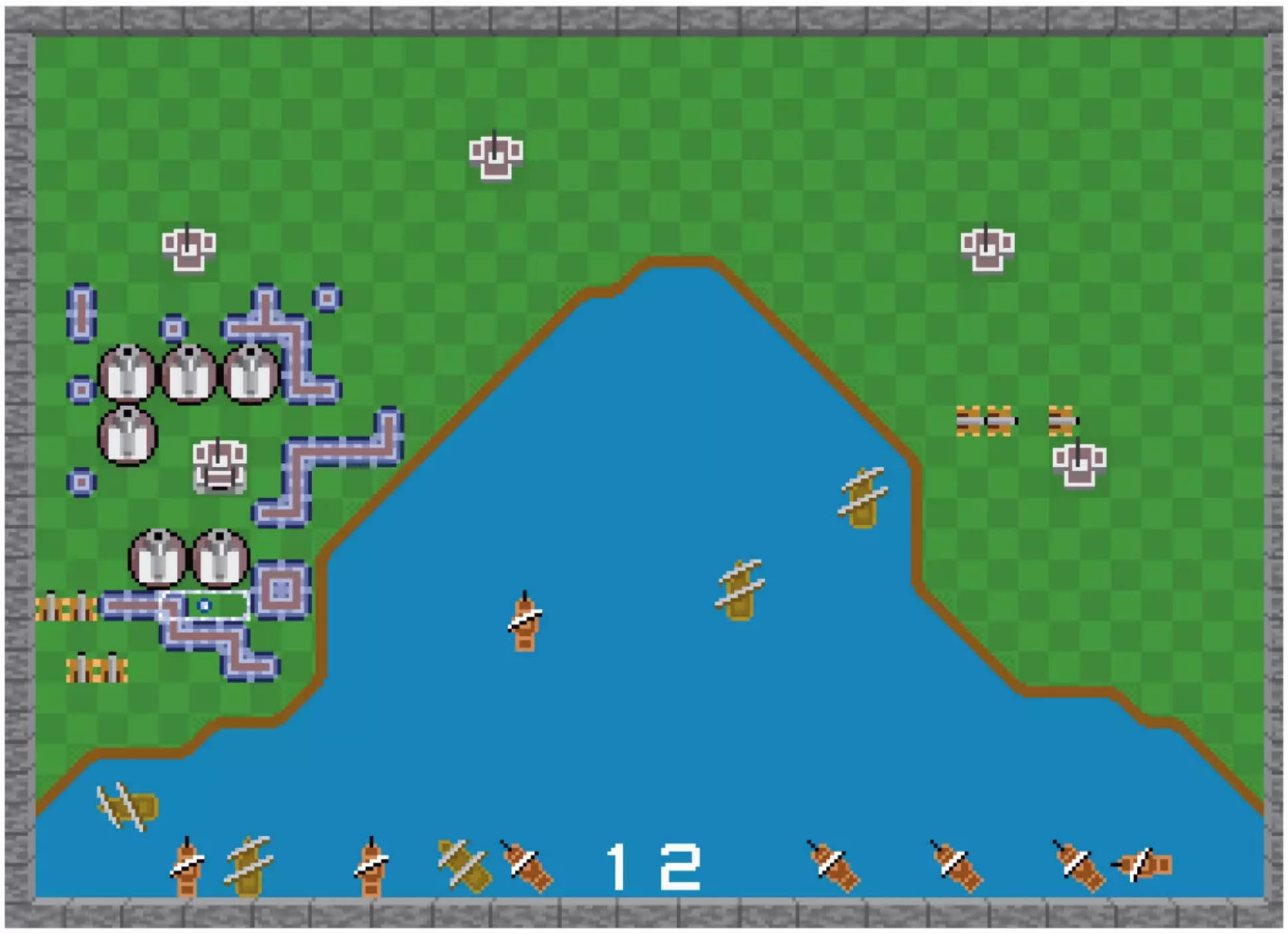
"We didn't really want to take on the burden of the AI for the computer building forts," explains John, "which would never have worked out very well anyway because it just wouldn't have played well against a computer opponent. Thematically it worked really well to have a kind of invading force and I'm sure Dave came up with the idea to have ships landing on there. And of course that's the more natural state for a castle – rarely do two castles actually fire at each other!"

John acknowledges the hidden depths of the game – the main strategic question in Rampart is whether players should expand their castle to add extra cannons, which can only be built within the walls, or limit their fort size to allow for easy maintenance but a possible additional pounding from opponents. "I love games that make you make trade-offs like that. One additional tactic is the act of turning your cannons on your own castle, just enough to blast an easier to plug hole in your defences, because as the game goes on, the smaller, easier to fit pieces become much harder to come by.

"I think the difference is that if you look at a game like Tetris it's actually a half competitive configuration as there are two parallel tracks with pieces dropping from the sky, and at Atari we were always looking at ways



» The game sure succeeds at igniting your competitive side.



» The style of the game was as memorable as its gameplay.

with which you could mess with the other person," says John, when asked about the thought process behind splitting it into distinct attacking and defensive phases. "Dave and I are big sports fans and in any sport there's typically kind of segmented play, particularly in American sports. When you think of turn-based gaming there's a rhythm to the game that is phase-based, so we were borrowing some of those basic concepts."

"Also from a simplicity standpoint, if we combined those two phases together so you fire immediately on the other guy as soon as you had surrounded an area it would have been very confusing because from a controller standpoint, what do you do with the cursor? The cursor in one phase is showing a piece and in the other a reticule or sight, so it made it obvious that you wanted to separate those distinct phases. The game is best when there's the incredible tension of trying to fit that last piece in and your clock is ticking down, and that's just between you and the computer at that time, the game resolves itself into being just a simple puzzle game at that point, which I thought was very attractive."

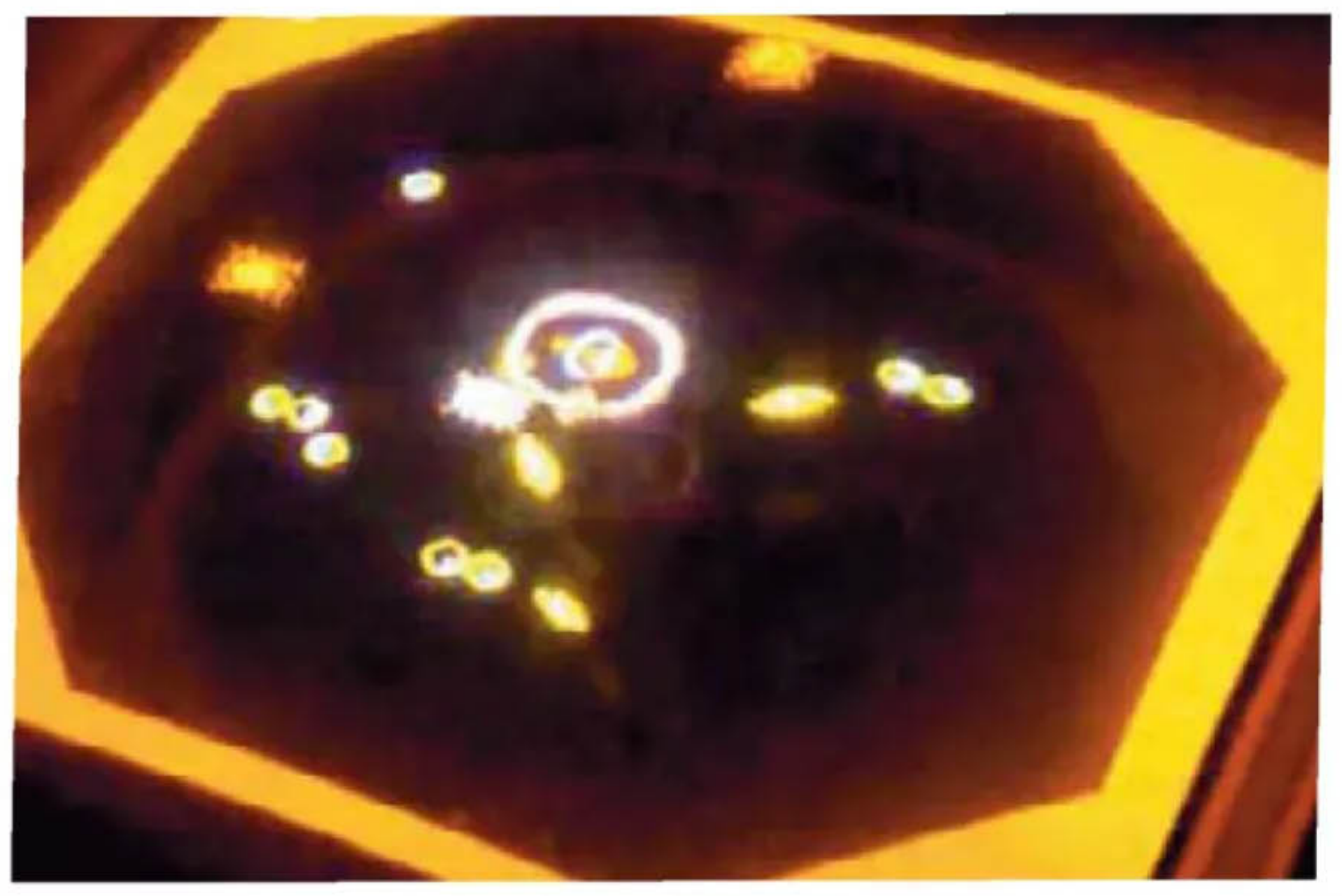
Rampart was well received in arcades, where the deluxe three-player cabinet was supplemented by a less expensive two-player joystick version. There were also a number of conversions for the home market, of which the Super Nintendo and Atari Lynx versions are perhaps the most well known. "I certainly had the opinion that there was no way it would ever be a good joystick game," admits John. "As it turned out it was really quite easy to turn into a joystick game, and there are certainly plenty of people that like it better that way. The trackballs we ended up using were fairly heavy and I'd still love to go back and tune a bit of the motion because Rampart is actually a fairly difficult game to get good at – there's a pretty steep early ramp line and a lot of that is probably due to the fact that the trackball isn't a very familiar controller to most people. And it would not have moved to the home market unless it could be a joystick game."

"At the time the arcades were under a lot of pressure. Dave and I actually left Atari Games about a year after finishing Rampart to go to Electronic Arts because the arcade business was getting more challenging, and I was very sad to leave it. Rampart did reasonably well on home systems, in fact Electronic Arts did the conversion (at that time we had a group called Tengen involved in the conversion of coin-op games, which had become a very big part of the business.) I actually work at EA now and there's a wall of games and Rampart's up on that wall, it wasn't a huge hit but it did well and I think it's still reasonably popular with a group of people."

Indeed, certain members of the RG crew have been known to have had heated and highly enjoyable Rampart multiplayer sessions into the early hours. In a recent Gamasutra feature industry veteran John Harris called it "perhaps Atari's last great game," adding, "it's my vote for the best designed video game ever made."

"I had a really wonderful experience at the California Extreme Gaming convention," says John, sharing a recent encounter with his creation, "a very large show in San Jose with a ton of pinball and videogames. I got the pleasure of sitting behind a line of people trying to play Rampart, just watching them play. The guys were really serious about playing it and were having a great time and, you know… that's just the greatest compliment in this profession that you can have…"

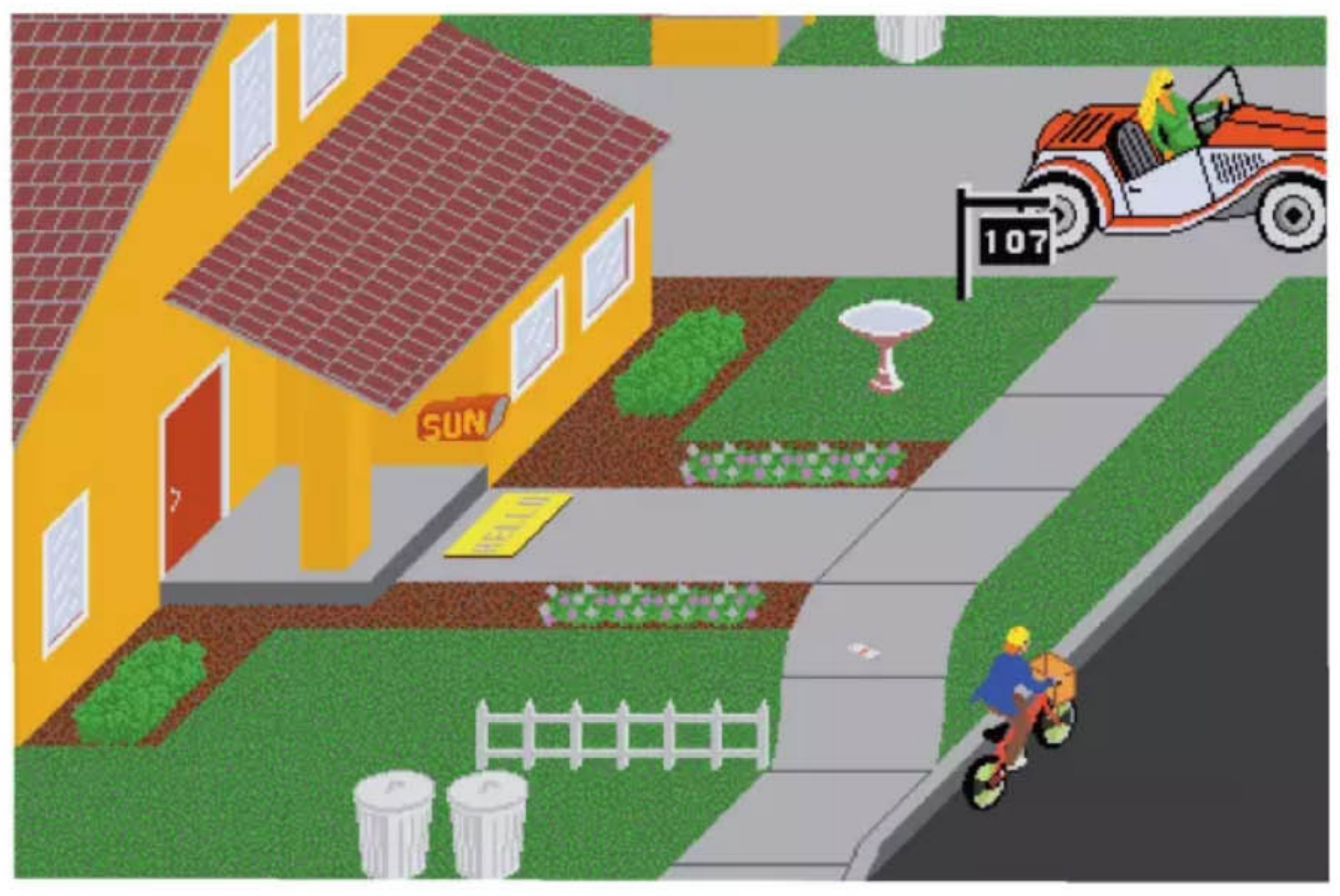
BORN IN THE USA



AKKA ARRH

YEAR: 1982

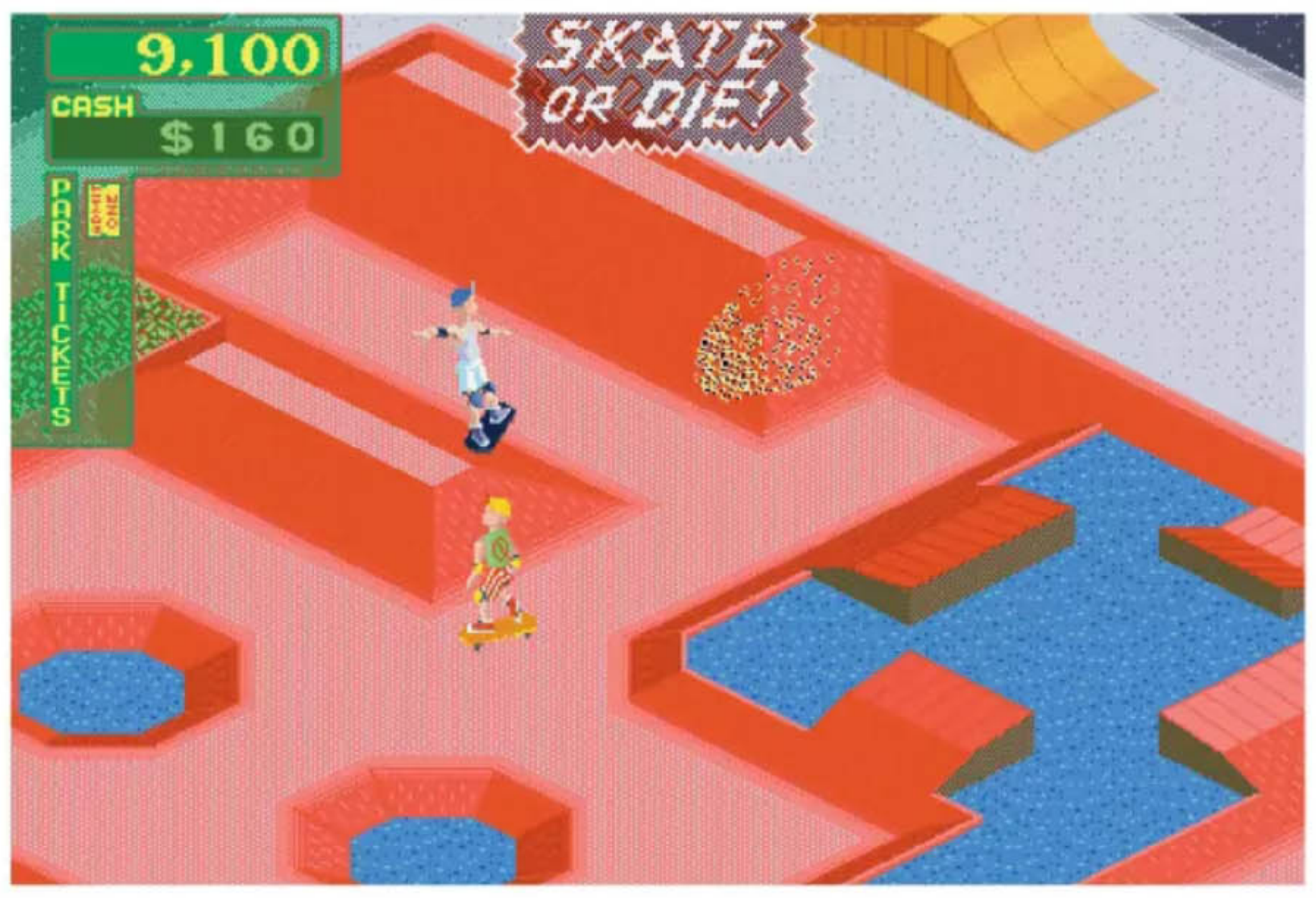
John and Dave's first project together alongside Mike Hally, the Akka Arrh was a space-theamed shooter which played like a cross between Star Castle and Missile Command. Deemed by Atari to be too complicated, it was never released, though a few cabinets do exist.



PAPERBOY

YEAR: 1989

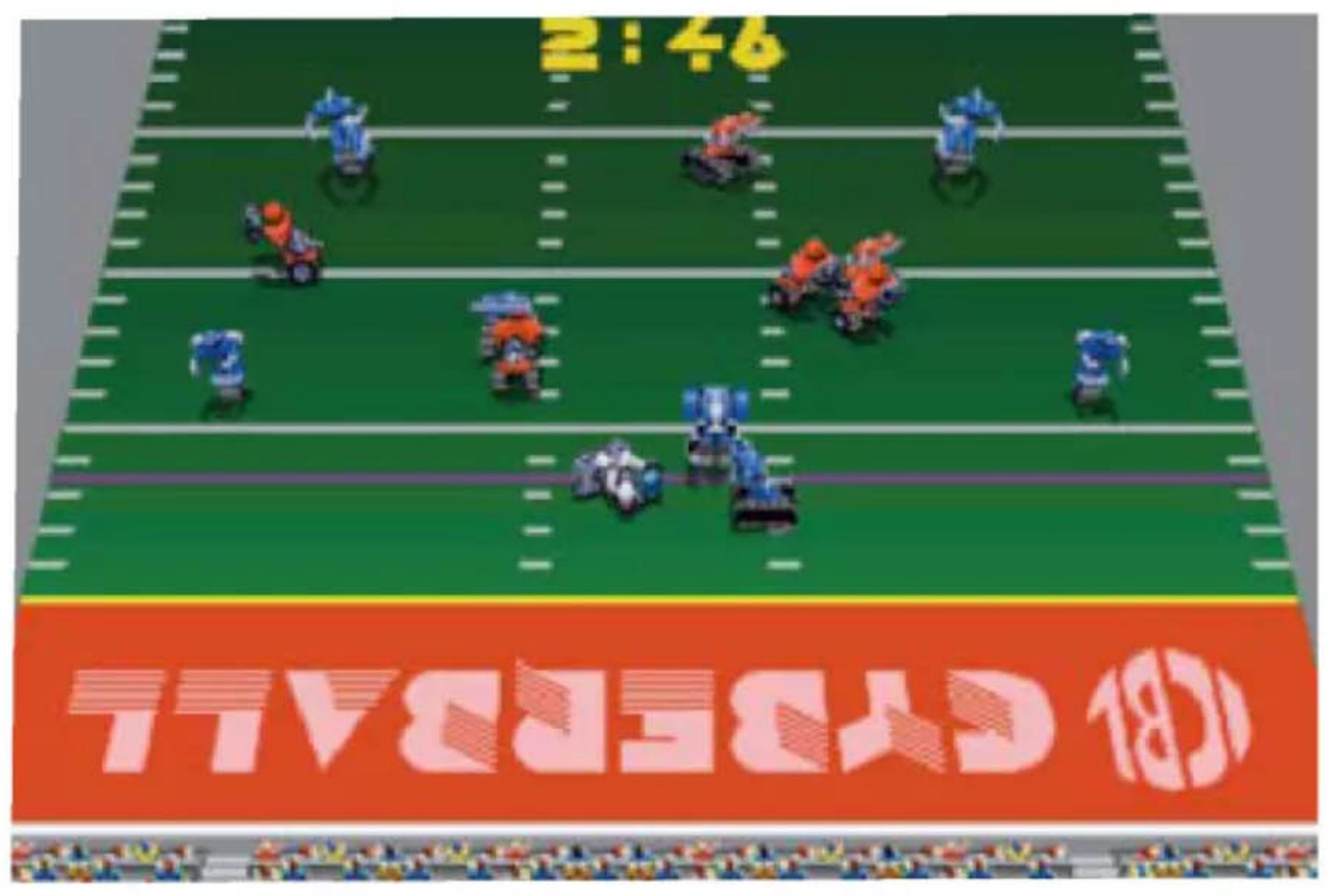
Notable for its famous 'handlebar' controller, Paperboy is an eccentric take on suburban Americana, with some nifty isometric graphics. And the challenge of cracking that perfect paper round, complete with a little light vandalism, is still good clean fun.



720°

YEAR: 1986

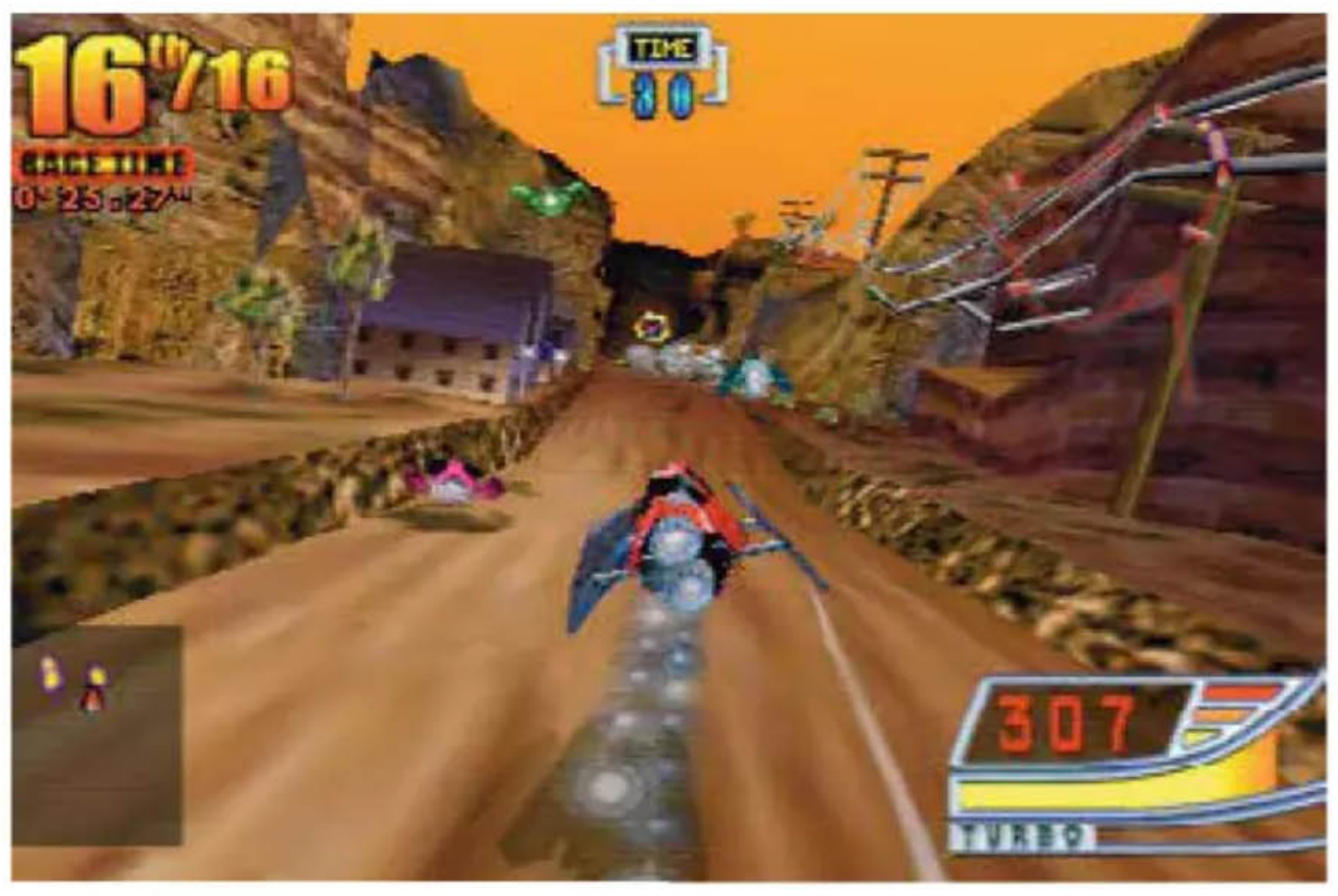
Inspired by the skateboard craze of the Eighties, this ambitious game gave you a whole playground of extreme events. As with Paperboy, 720° is no slouch when it comes to its control interface, using a unique joystick able to replicate the full motion of a 720° aerial spin.



CYBERBALL

YEAR: 1988

It's the year 2072, where the great sport of American footie is now played by giant robotic quarterbacks. Effectively John Madden's with cyborgs, Cyberball features all the plays and tussles you'd expect from American football with one notable modification: the ball's a bomb…



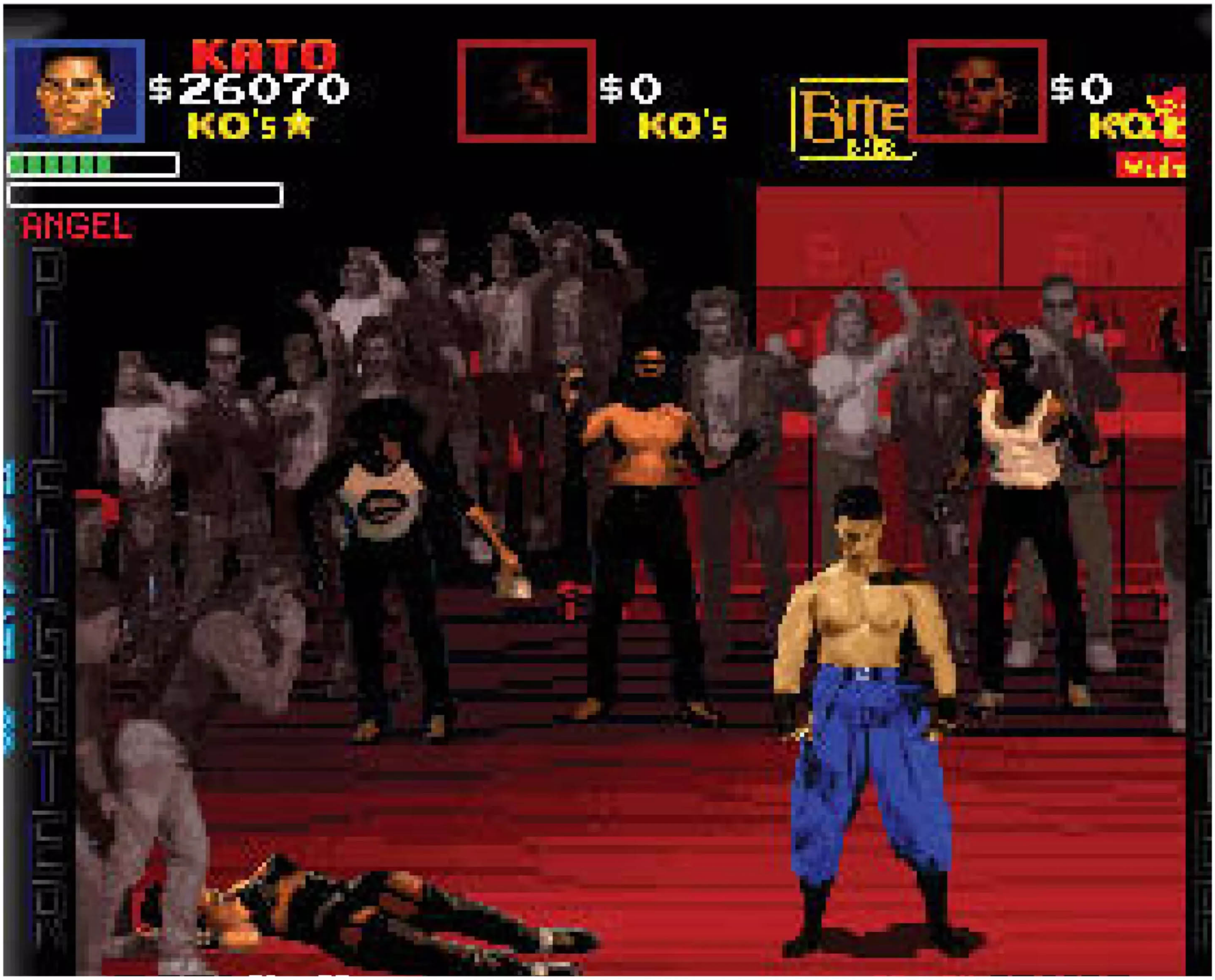
VAPOR TRX

YEAR: 1998

After leaving Electronic Arts in 1995, John and Dave co-founded a new development house, Blue Shift Inc, with ex-Atari programmers Bob Flanagan and Doug Snyder. Vapor TRX, a WipEout-style futuristic racer, was the company's first arcade project.

THE MAKING OF PIT-FIGHTER

ATARI'S BRAWLER WAS THE FIRST TO USE DIGITISED GRAPHICS, A GROUNDBREAKING TECHNIQUE FOR THE TIME. KIEREN HAWKEN TRACKED DOWN DESIGNER AND PROGRAMMER GARY STARK TO FIND OUT WHAT SPARKED THIS REVOLUTION



First released to arcade audiences in August 1990, Pit-Fighter was quite unlike any fighting game that had come before it. Previously, games of this genre had always been 2D affairs with pretty pixel drawn graphics and, more often than not, an oriental theme. A big fan of martial arts movies, Atari Games programmer and games designer Gary Stark was proposing to do something very different…

"Atari had always made family orientated games and it started looking obvious that fighting games were becoming very popular at the time," he reveals. "Atari were very against the idea at first and it took a meeting with Hide Nakajima (who was CEO of Atari Games at the time), the producers and the directors to get them to go ahead with the project. It took a lot of convincing!"

Interestingly, the actual idea for Pit-Fighter presented itself after Gary watched a popular Jean-Claude Van Damme movie. "Blood Sport was definitely the inspiration for Pit-Fighter," he admits to us. "I had just watched that movie around that time and it seemed like a great idea for a game, we even used it as the working title." In fact the title Atari ended up using, Pit-Fighter, was chosen just before the game was ready to hit the arcades. After Atari realised that it couldn't use Blood Sport due to copyright infringement, a multitude of other names were considered for the fighter, including Tough Enough, Blood Warriors, Prize Fighters, Arena Of Death and the hilarious Masters of Buffness."

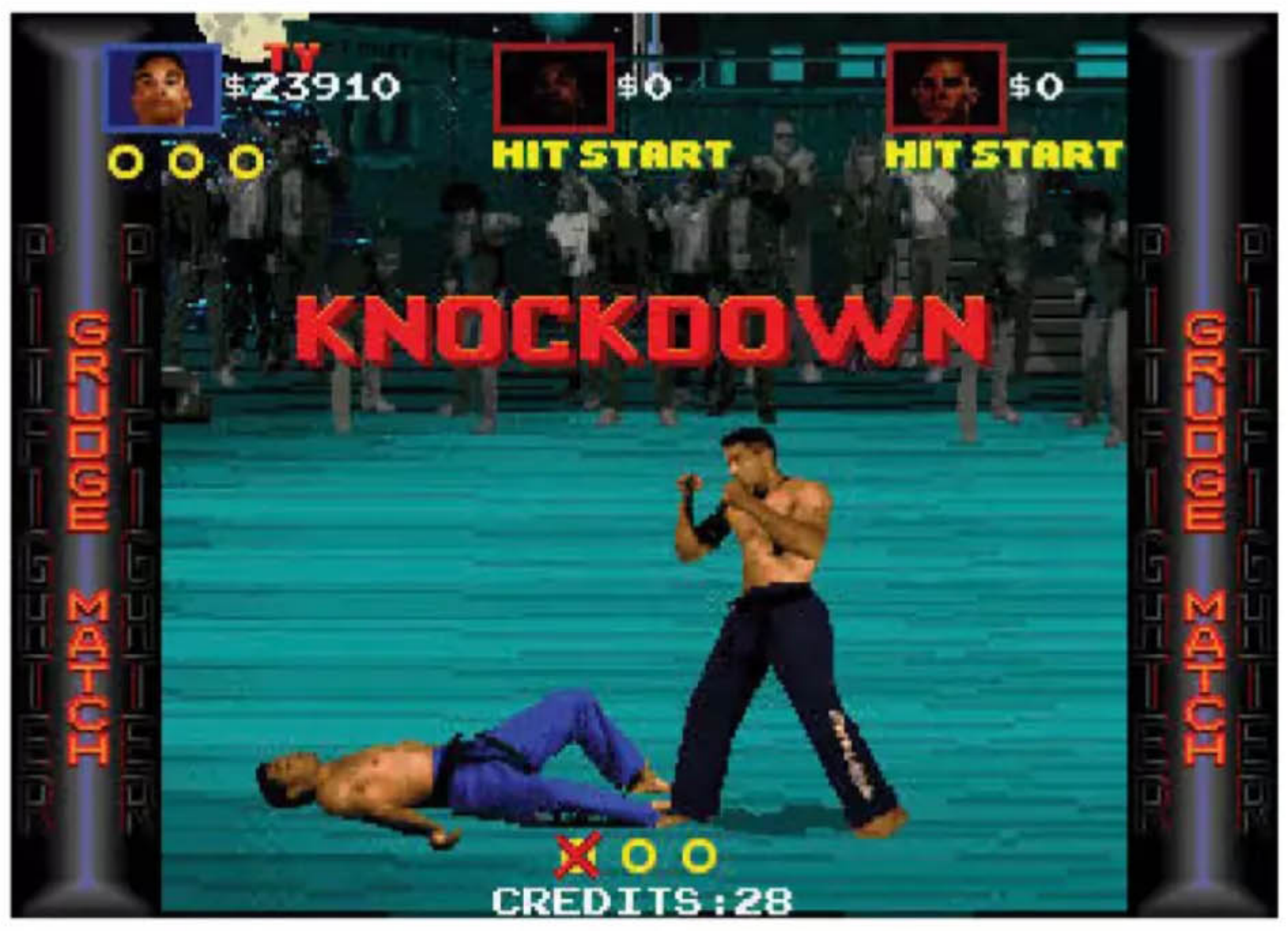
Design evolution

The design of Pit-Fighter was set out very clearly from day one and differed very little from the initial concept, something very unusual for the time, especially a title with such ambitious concepts and ideas. Gary proposed that Pit-Fighter would feature digitised graphics, co-operative multiplayer gameplay, weapons, interactive arenas and different fighting styles. While all of this sounds very standard for a game released today, back in the late Eighties it most certainly wasn't. The biggest feature of Pit-Fighter was arguably its visuals – digitised graphics had never been used in a fighting game before (Mortal Kombat's release was still two years away), and Gary explains how the use of the technique came about. "We had just got a video booth at Atari and had just done a bit of testing with it, so it seemed a good fit for the game to use real people. It was a nightmare for the people who worked on it though as this had never been done before that. There really were a whole lot of teething problems."

» Gary Stark's love of martial arts movies can be seen in Pit-Fighter.

IN THE KNOW

- **Publisher:** Atari Games
- **Developer:** In-House
- **Platform:** Arcade
- **Year released:** 1990
- **Genre:** Fighting Game



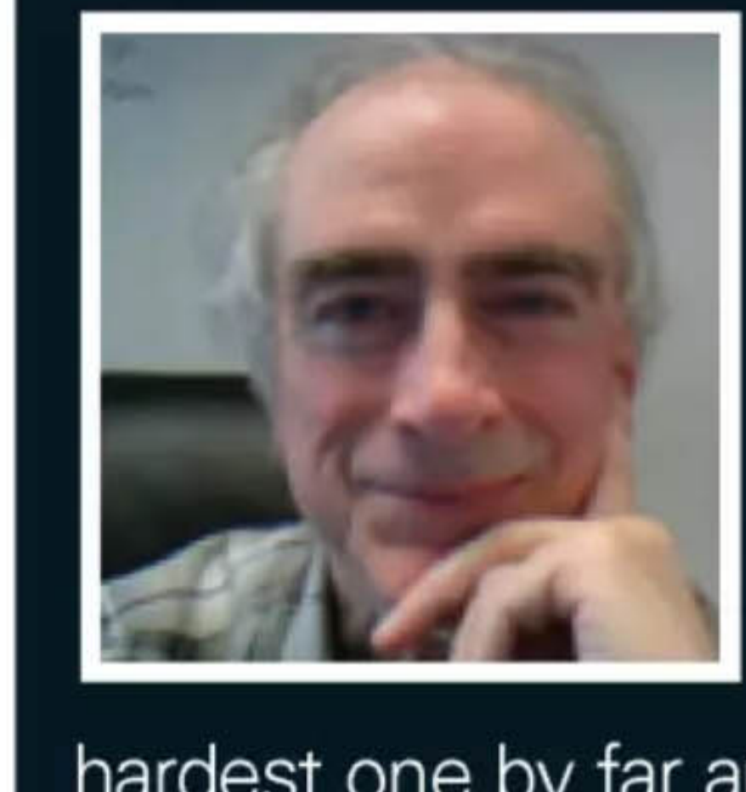
» Every third match is a grudge match where you must face off against an identical version of yourself.

Finding people to star in this new game also posed it own problems too. "I was a big gym bunny so knew where to find people to be in the game," Gary enthused. "I went round the local ones looking for people with the right look. But people didn't believe me when I said I was looking for people to be in a videogame, that just wasn't something normal at the time. I actually had to get business cards made up that said 'Talent Scout' on them to seem more legit!" Then came the challenges of actually filming the actors in their roles, something that Gary became very involved in. "All the actors were filmed in front of a green screen, but it didn't really work with them just acting out moves. So I volunteered to put on a green suit and get beaten up for the game! All the moves in the game are being performed on me!"

Another striking feature of Pit-Fighter was its use of scaling to zoom in and out of the playfield, itself quite a new concept that had been pioneered by Sega and its impressive Super Scaler coin-ops such as OutRun and Space Harrier. Gary tells us how the use of this technology came about. "We had some great hardware guys at Atari and they had recently developed the Scaling Chip. Atari always encouraged us to re-use existing hardware to save money and this seemed like something that could be very useful for the type of game we were making."

> "I ACTUALLY HAD TO GET BUSINESS CARDS MADE UP THAT SAID 'TALENT SCOUT' ON THEM TO SEEM MORE LEGIT!"
>
> GARY STARK

A WORD FROM AL BAKER

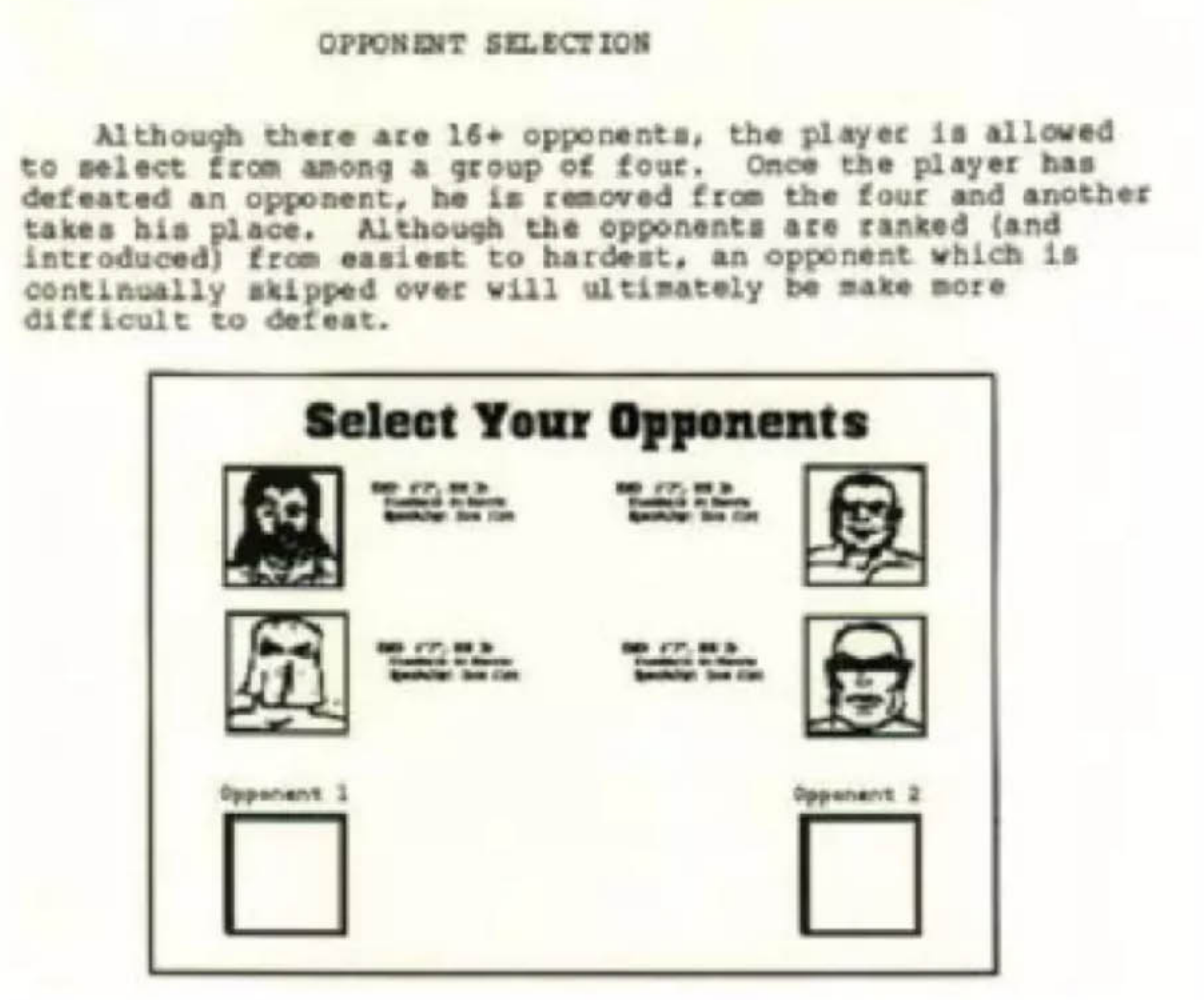


Given how advanced *Pit-Fighter* was for its time, did you think it would be a struggle to convert it?
Oh yeah! [laughs] But, I'd had experience with impossible situations. This was the hardest one by far and sure generated a lot of sleepless nights.

Did you get access to all the original source code and if so how much easier did that make and how useful was it?
I did, which leads to an interesting story. There was actually a version of C running on the Lynx, so I spent some time getting the original code ported over and actually got that running on the Lynx. It ran at an amazing frame rate, about 1 frame every 15-20 seconds! I went through that line-by-line converting the code from C to assembly. That got the frame rate up to a playable level AND remained faithful to the original game! In fact, I believe someone pointed out in an article about the game shortly after it was release, that the Lynx version had some of the same annoying bugs in it as the Arcade version!

The Lynx version is missing the speech from the arcade game, which is strange given that most Lynx games use speech, why was this?
Memory. The trade off was features. We wanted to be as totally faithful as possible to the original game but the Lynx is not a TARDIS. Only so much could get stuffed into it

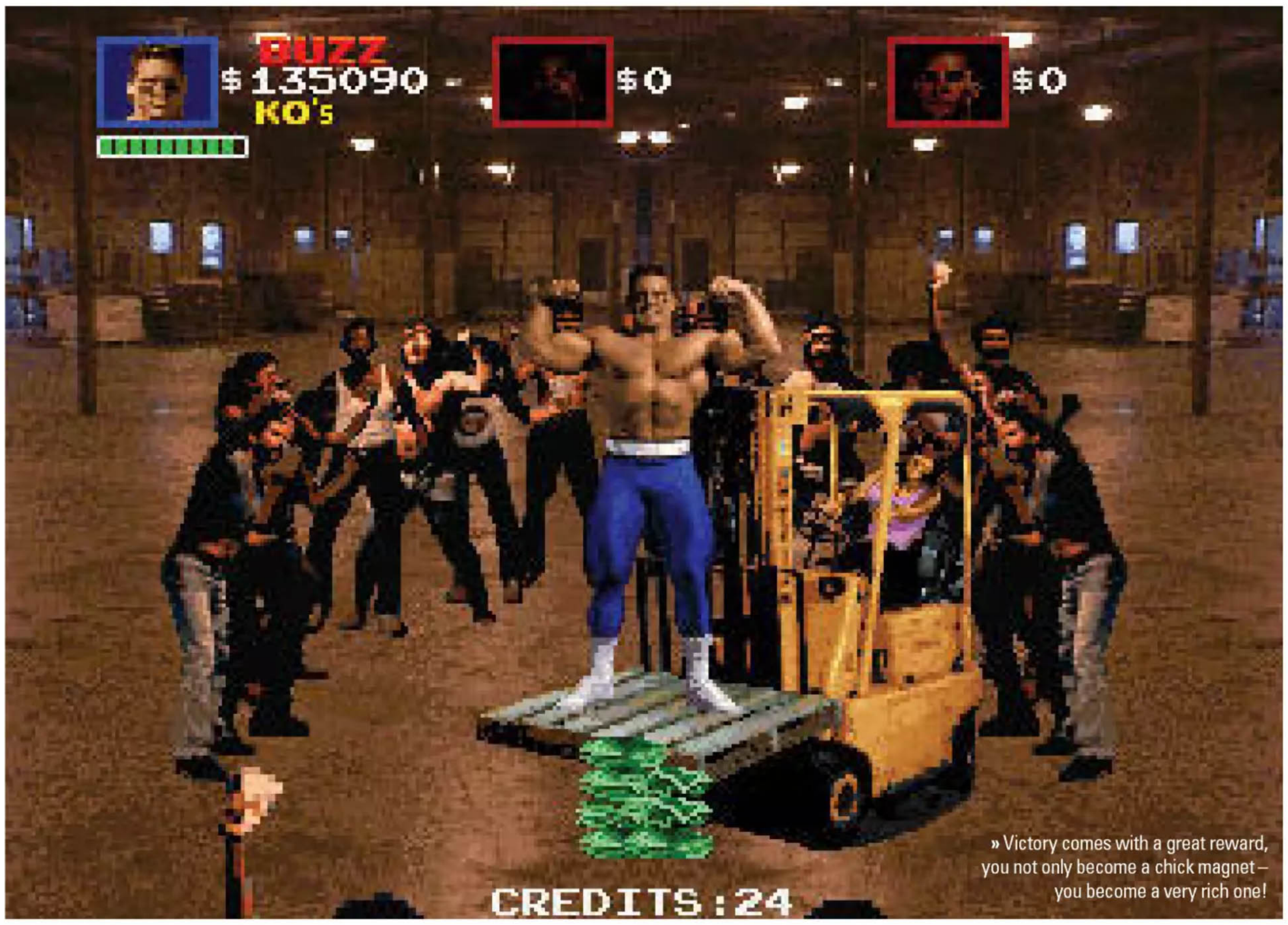
***Pit-Fighter* is renowned for having some horrible home conversions, are you pleased that you were one of only a couple of people to pull it off?**
Absolutely! Especially considering how many times I woke up in the middle of the night not sure I could pull it off or not!



OPPONENT SELECTION

Although there are 16+ opponents, the player is allowed to select from among a group of four. Once the player has defeated an opponent, he is removed from the four and another takes his place. Although the opponents are ranked (and introduced) from easiest to hardest, an opponent which is continually skipped over will ultimately be make more difficult to defeat.

» The initial design and concept was laid out early on in the developing process of the game



» Victory comes with a great reward, you not only become a chick magnet – you become a very rich one!

> "IT WAS THE VERY FIRST GAME THAT MADE USE OF PHOTOGRAPHED PEOPLE AND ATTEMPTED TO ANIMATE THEM. THAT WAS REVOLUTIONARY AT THE TIME."
>
> DENNIS KOBLE

So what became a revolutionary game for the time was very much making use of technologies already developed at Atari, they just came together perfectly for Pit-Fighter. A game already full of innovative features, the amount of interaction with your surroundings was another attribute that surprised arcade audiences. Pit-Fighter allowed you to fight members of the baying crowd, grab weapons and even smash up cars that had been foolishly parked in the arena. "The interaction with the environments was planned from day one, we really wanted to make the game something different," explains Gary. "We always wanted to make weapons available to the player." In fact, the number of weapons in the original concept and design documents is much higher. There was also a wider range of arenas and fight locations with places like a harbour, back alley and building site being considered. These were cut back for the final game due to memory constraints.

The final design of Pit-Fighter is a three-player fighting game where you can choose between a trio of very distinct fighters. Buzz is a wrestler who was slow but had the most strength with very powerful attacks. Kickboxer Ty had the longest reach and is gifted with the best agility. And finally there is Kato, a Karate champ who was awarded with speed and hard to execute but deadly moves. The game also allows players to choose the same character, just with a different coloured outfit. Each fighter has three distinct special moves as well as an individual move set, meaning each one plays very differently.

Opponents

The eight opponents all offer up different challenges and fighting styles that had to be adapted to. This line-up consists of The Executioner (wrestler), Southside Jim (street brawler), Angel (agile dominatrix), C.C. Rider (biker gang member), Mad Miles (army officer), Heavy Metal (punk rocker), Chainman Eddie and his identical twin (huge, muscular, chain wielding thugs) and finally The Warrior (a mysterious masked man and the current champion). In multiplayer mode you have to fight these foes multiple times as they are mixed and matched to provide an opponent for each human player. Every third fight is a grudge match where the human players must fight each other for supremacy. This works different to the standard rounds in that instead of having energy bars, it's the first player to achieve three knockouts that wins. The various fighting arenas, which range from a bar to an underground car park, are surround by a vociferous crowd who are baying for blood. Select members of this crowd will try to get involved in the fray and even give you weapons. If you get to close to them they will also scream insults at you before shoving you back into the fighting pit. The weapons vary greatly and consist of items like sticks and knives as well as motorcycles and barrels containing power pills, packed with steroids that make the player super strong for a short time. After each contest you are awarded with a fight purse, this varies according to the way you fought the match, with money being awarded for extreme brutality and how quick you were able to finish off your foe, among other things.

Reception

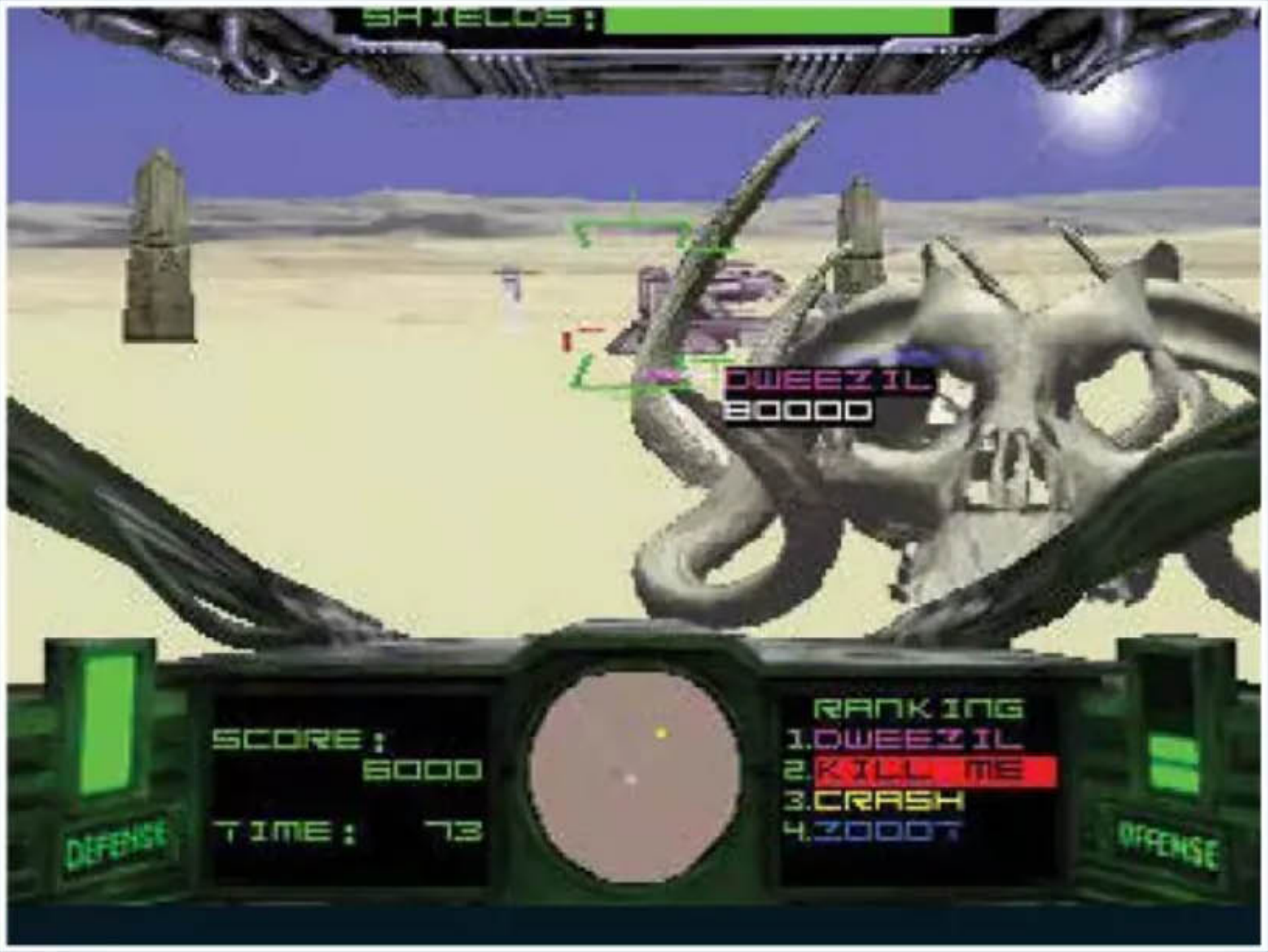
Pit-Fighter was hugely successful from the moment it was released, the huge audiences for the test machines let Atari know it was onto a winner. The

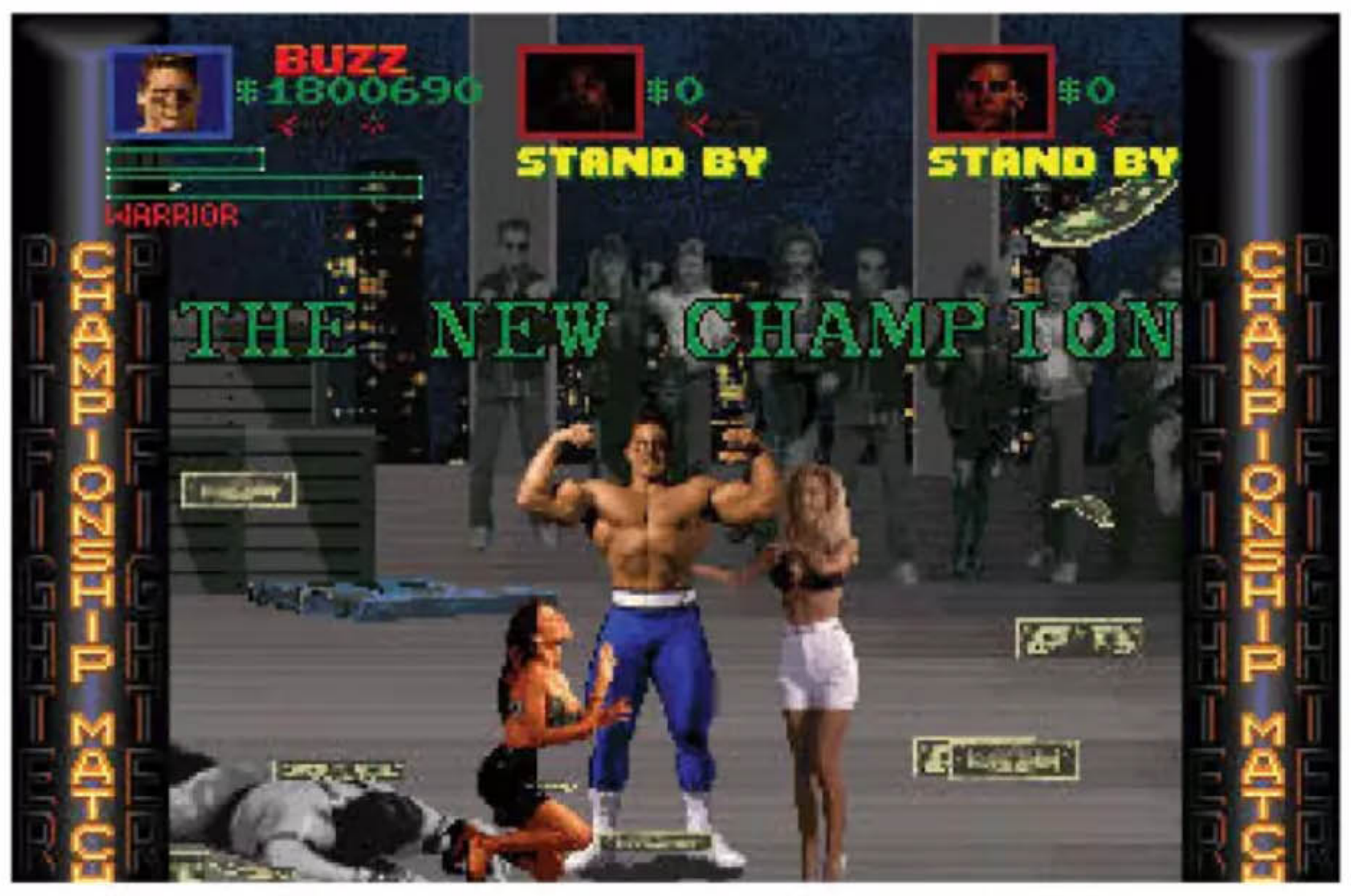
DEVELOPER HIGHLIGHTS

Cookie Monset Munch
System: Atari 2600
Year: 1983

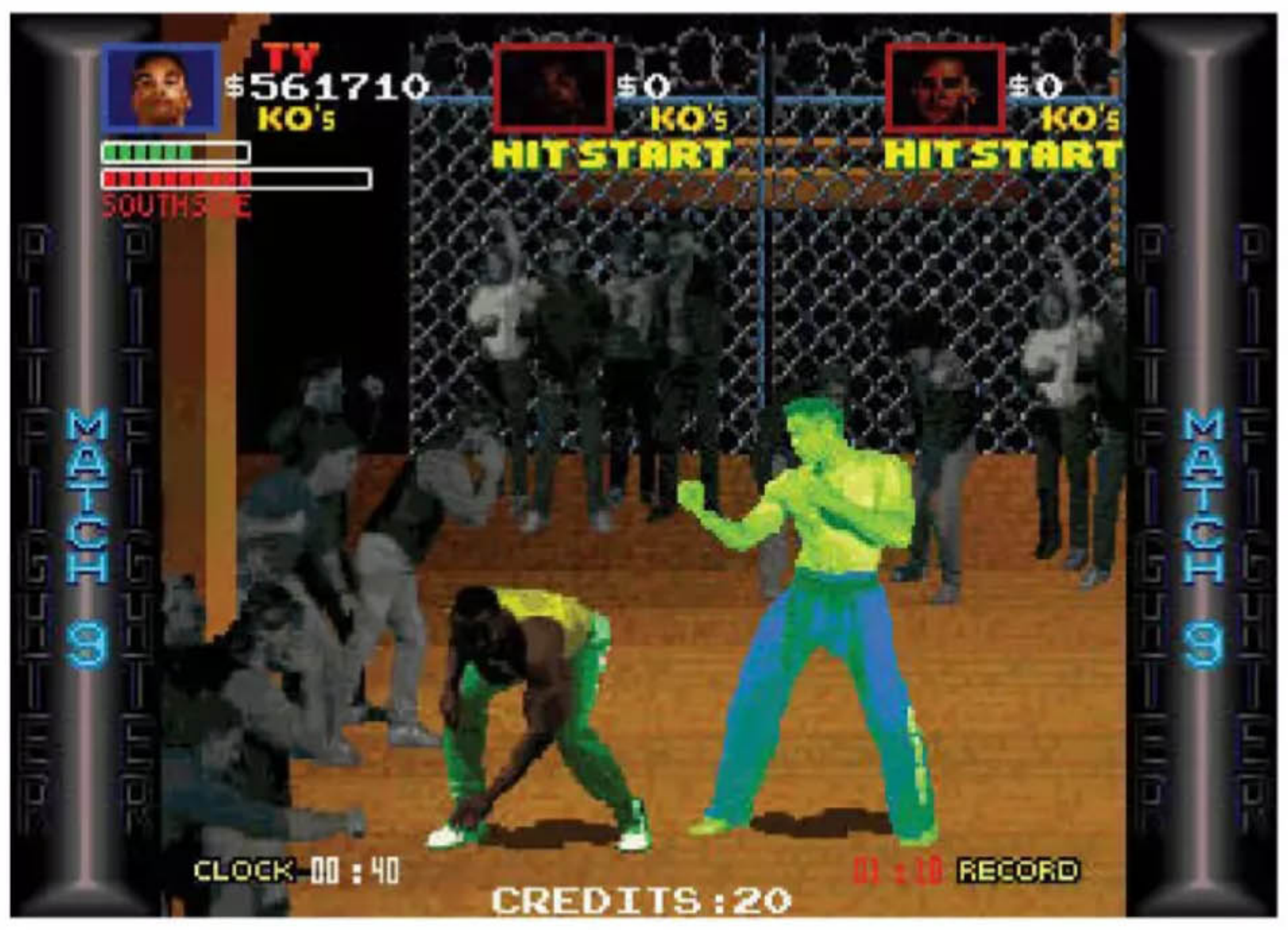
Star Raiders 2
System: Atari 8-bit
Year: 1986

T-Mek (PICTURED)
System: Arcade
Year: 1994

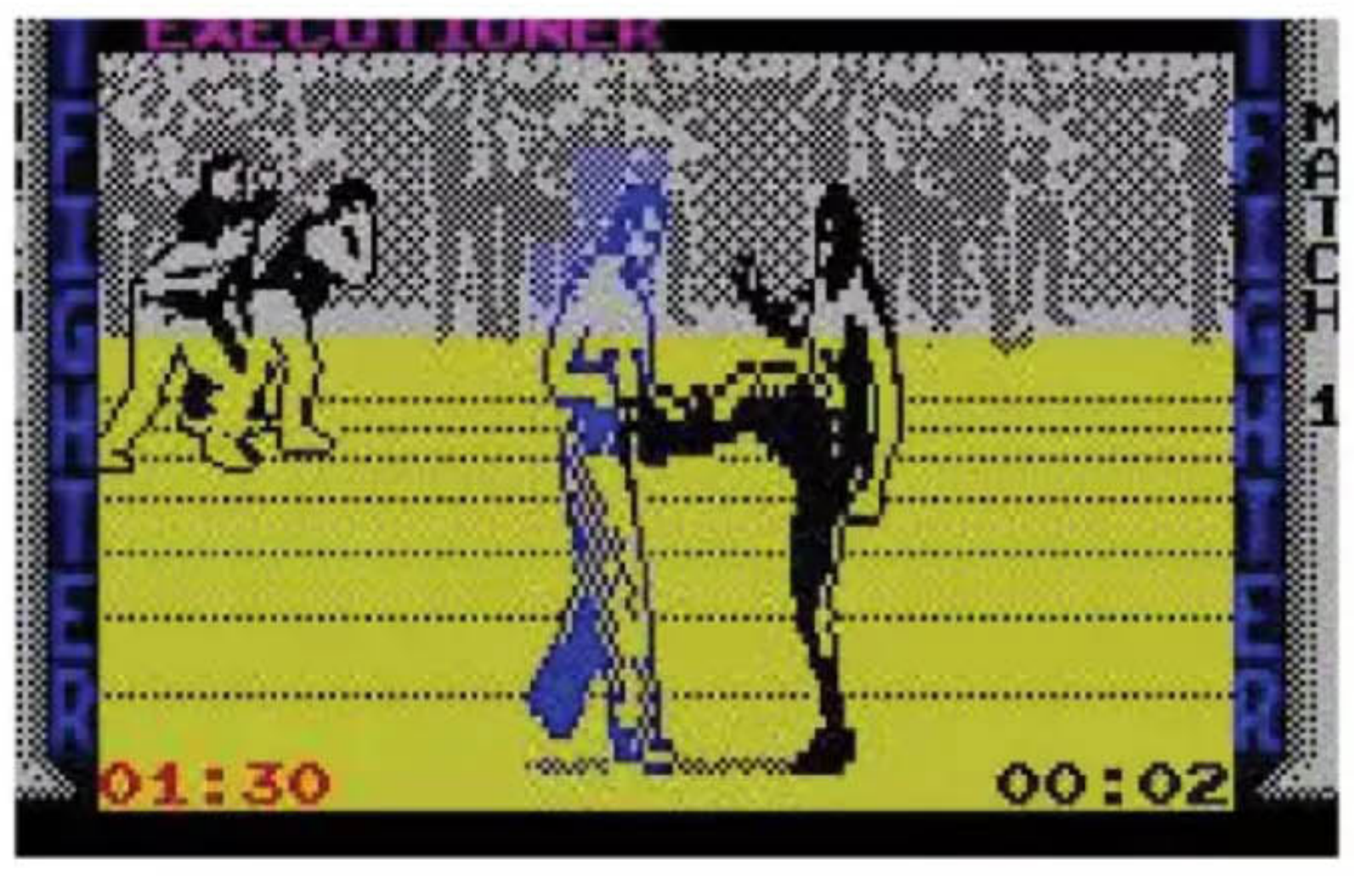




» A fight purse is awarded after a match, cash is awarded for extreme brutality!

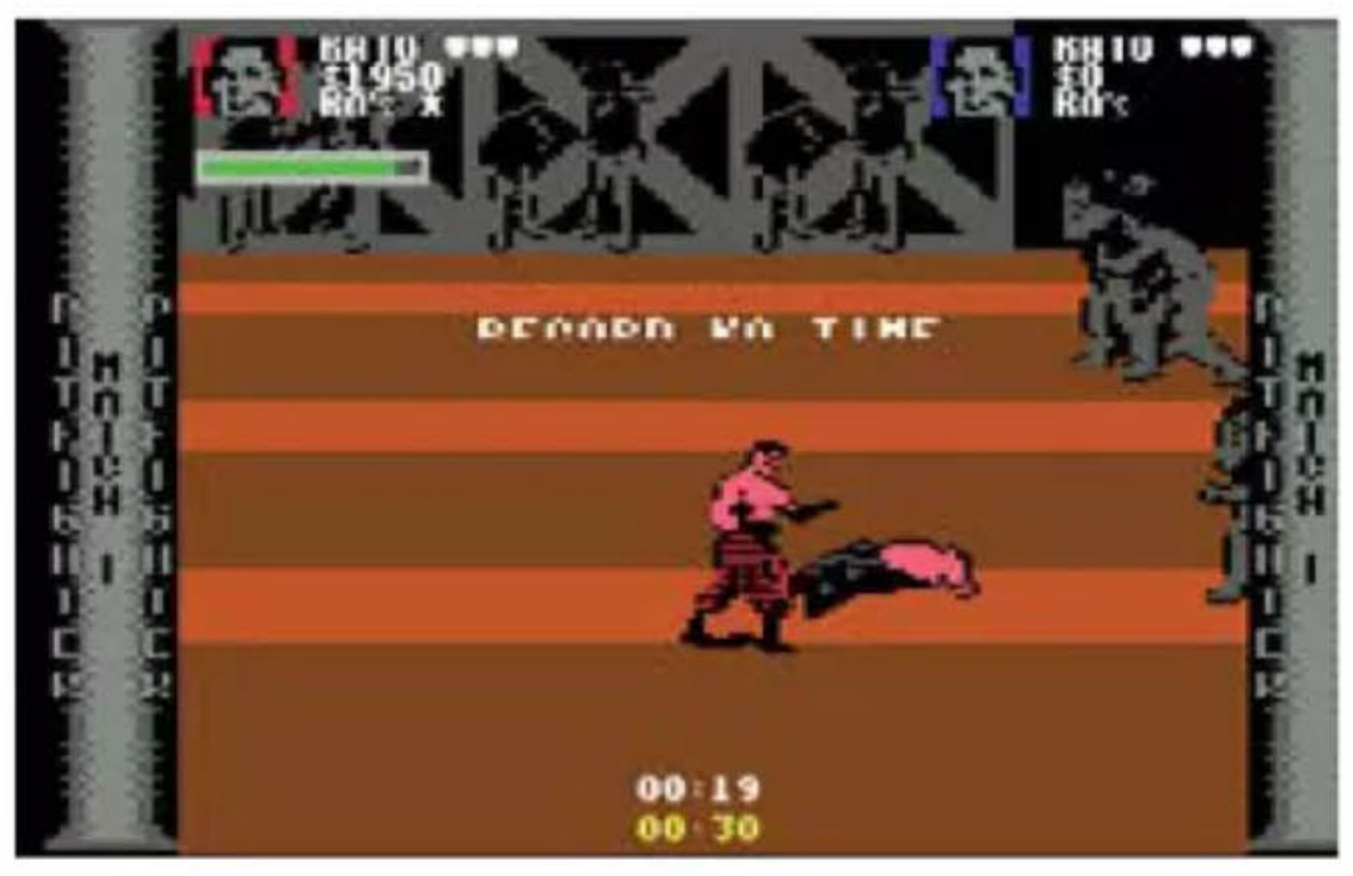


COIN-OP CAPERS



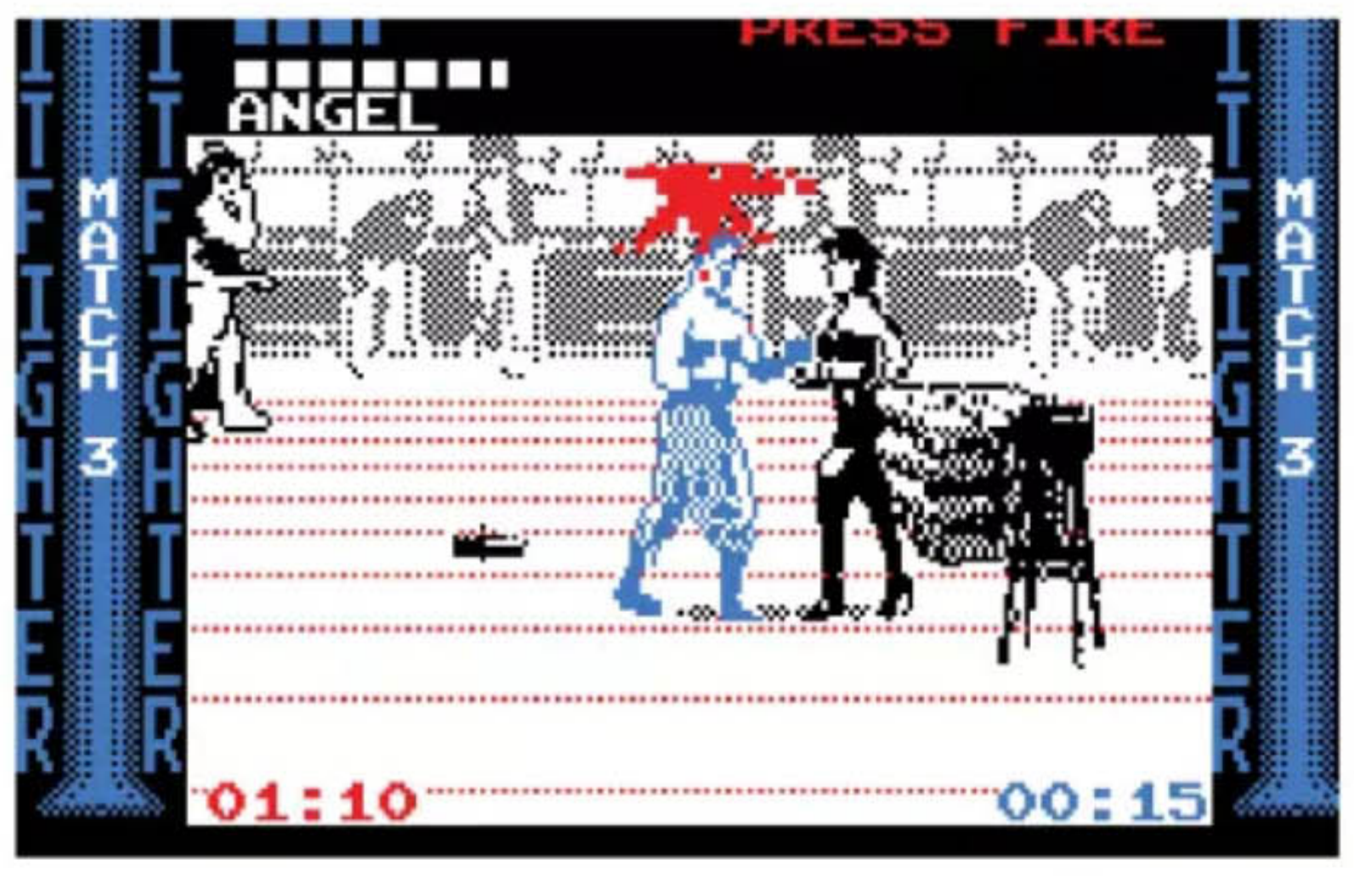
ZX SPECTRUM

A brave effort considering the hardware, it even tries to fake the scaling! The music is great but the rest of the game, not so much. Not one of the machine's finer moments.



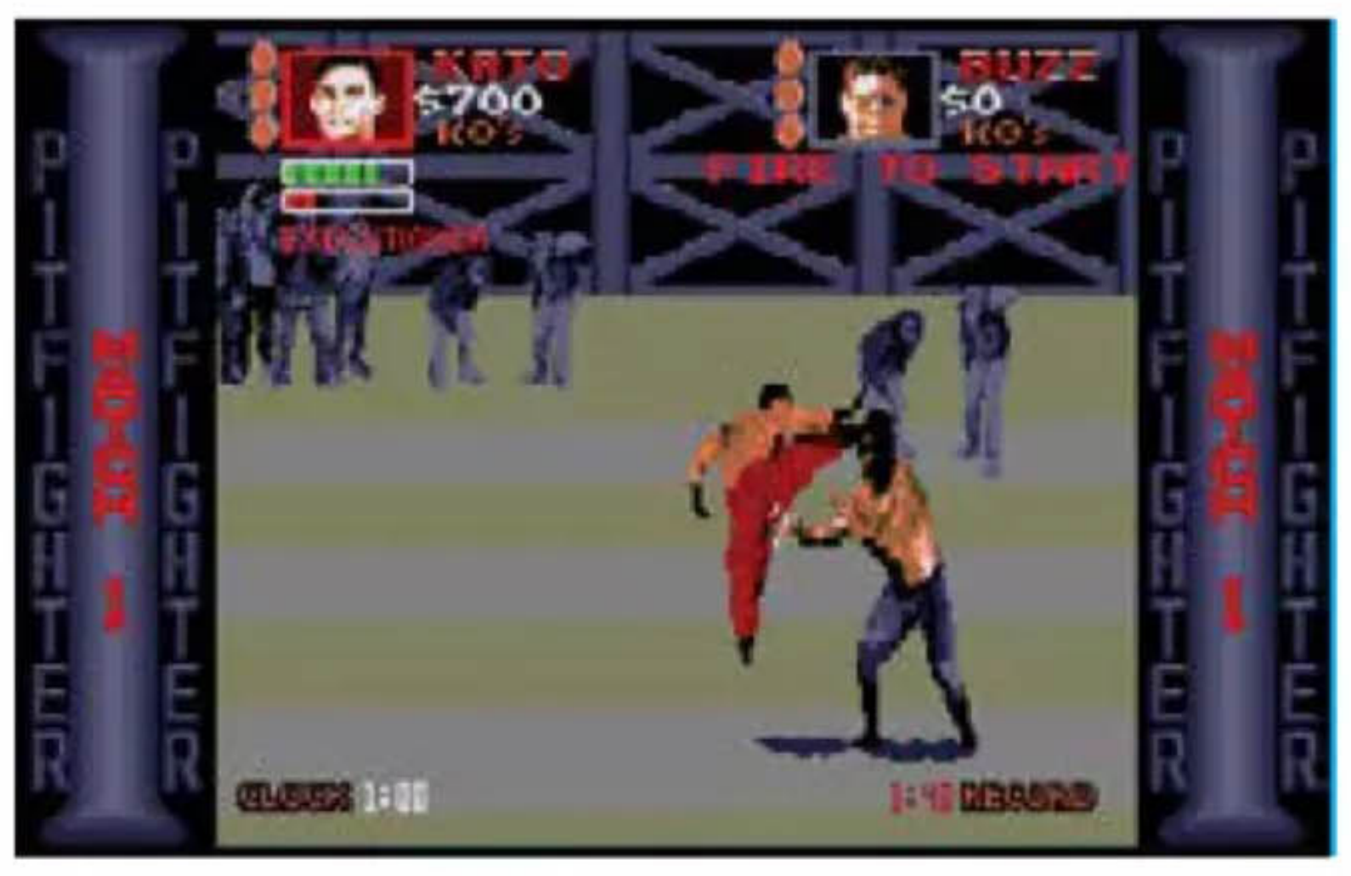
COMMODORE 64

This version suffers from blocky visuals, that are often very hard to make out, and some rather awkward controls. But it does have nice music and plays at a decent lick too.



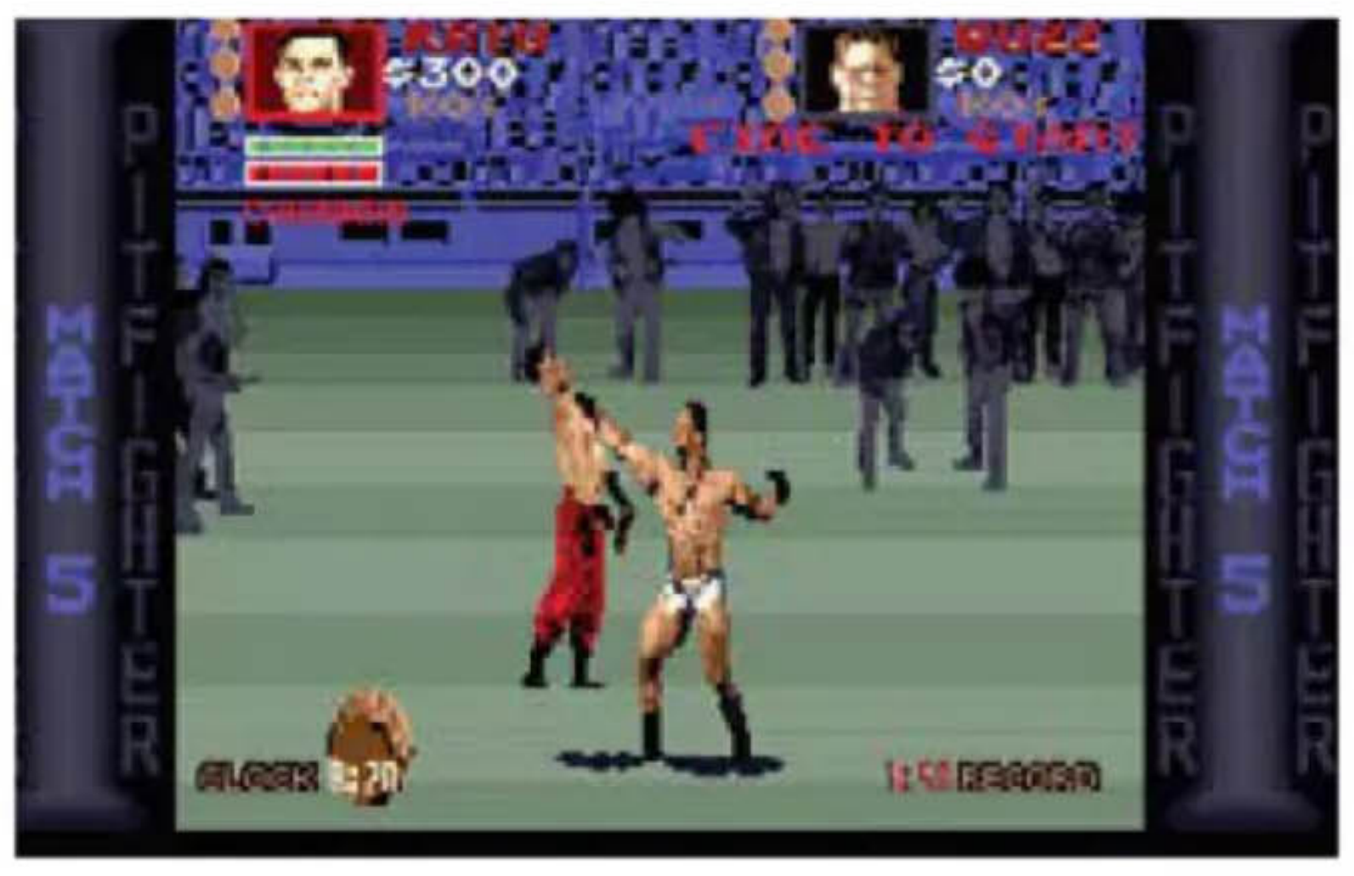
AMSTRAD CPC

Near-identical to the Speccy version, only it has an smaller play area and seems to run slower. Still, like the Speccy, the music is pretty impressive, which is something.



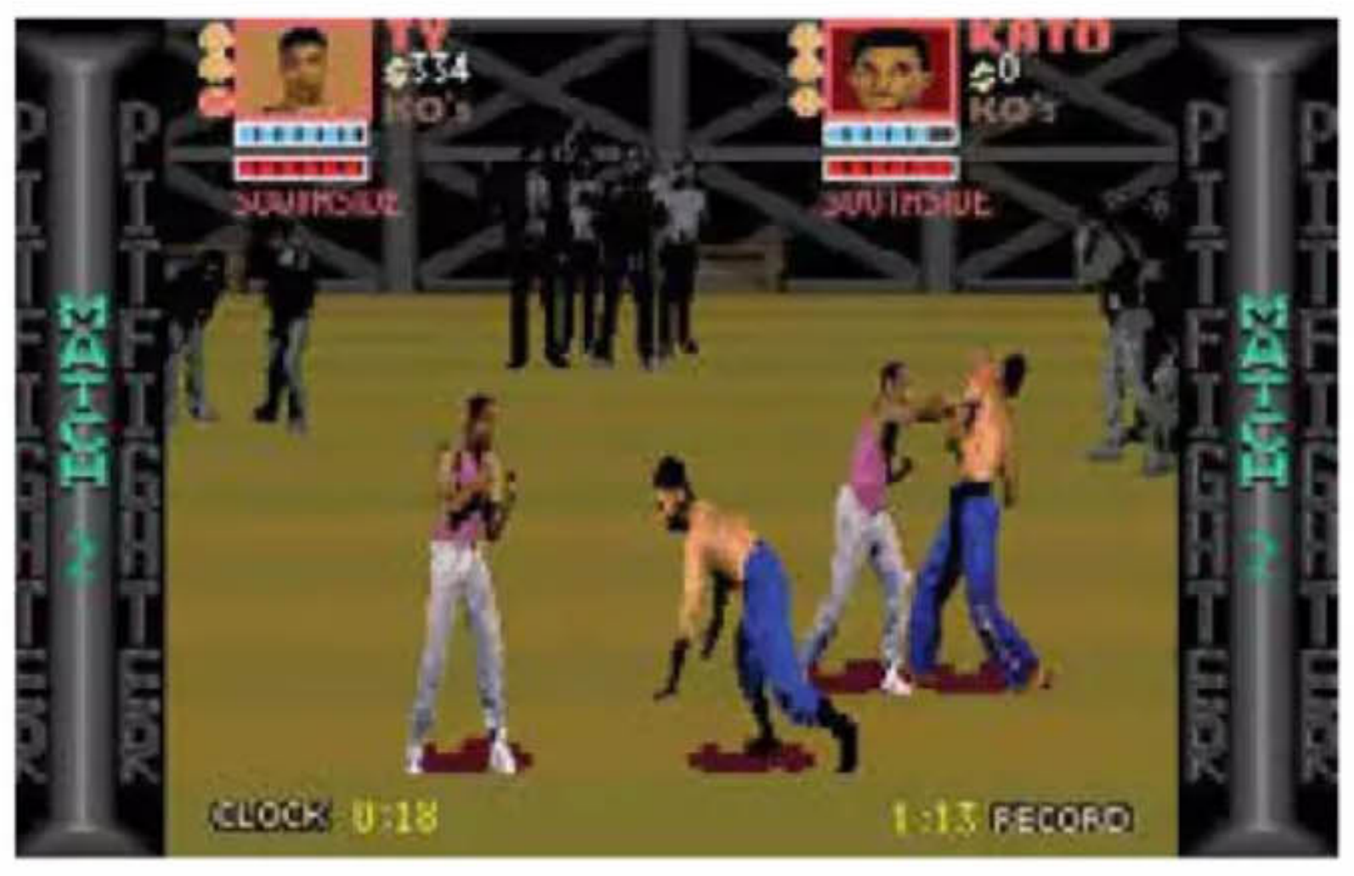
ATARI ST

Domark nearly pulled it off here, a great attempt at faking the scaling effects along with some fantastic graphics. But it's let down somewhat by the awkward one button control.



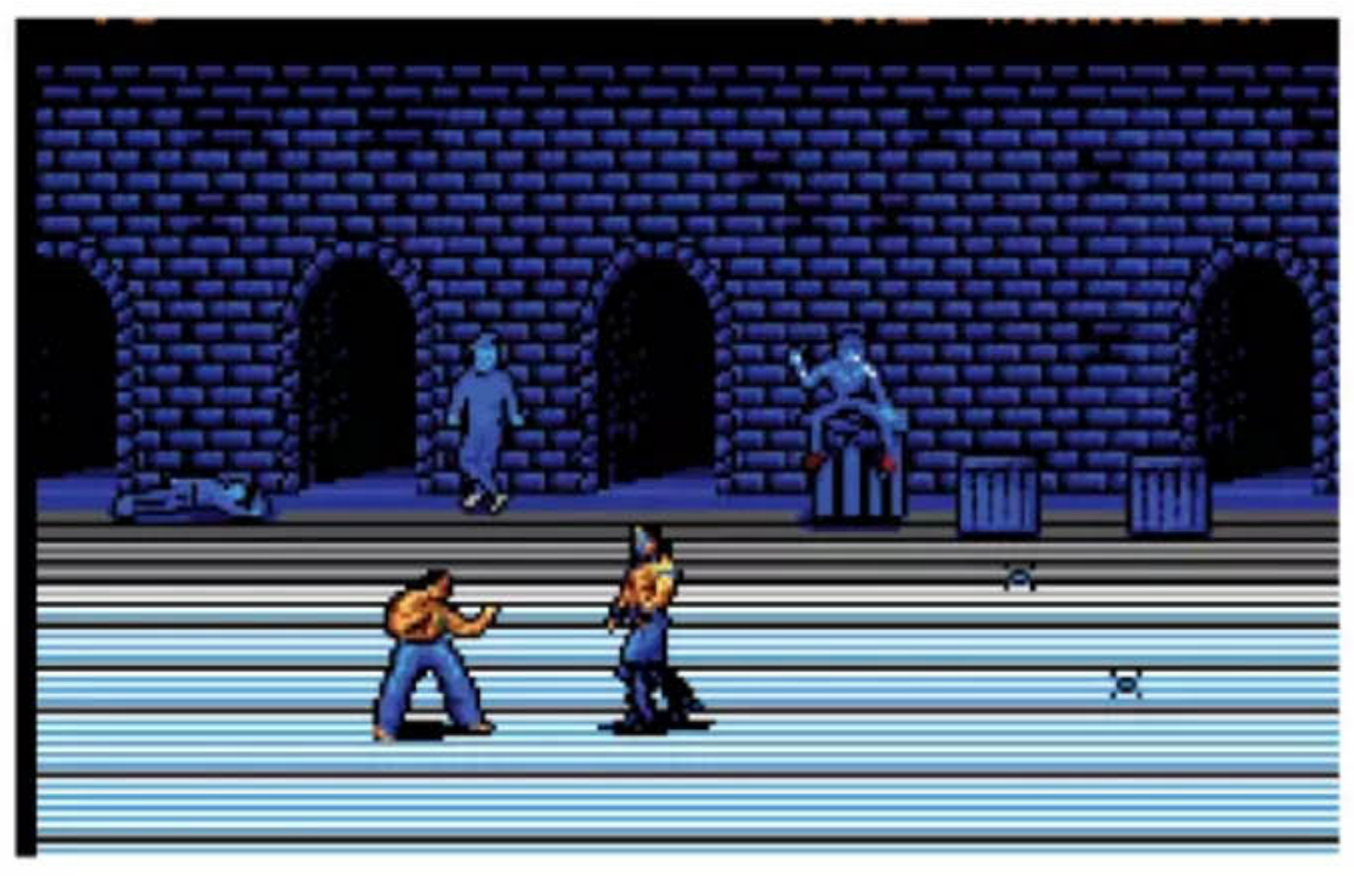
COMMODORE AMIGA

Similar to the ST but benefits from its faster speed. That said the controls are still not ideal and the music isn't a patch on the ST tune.



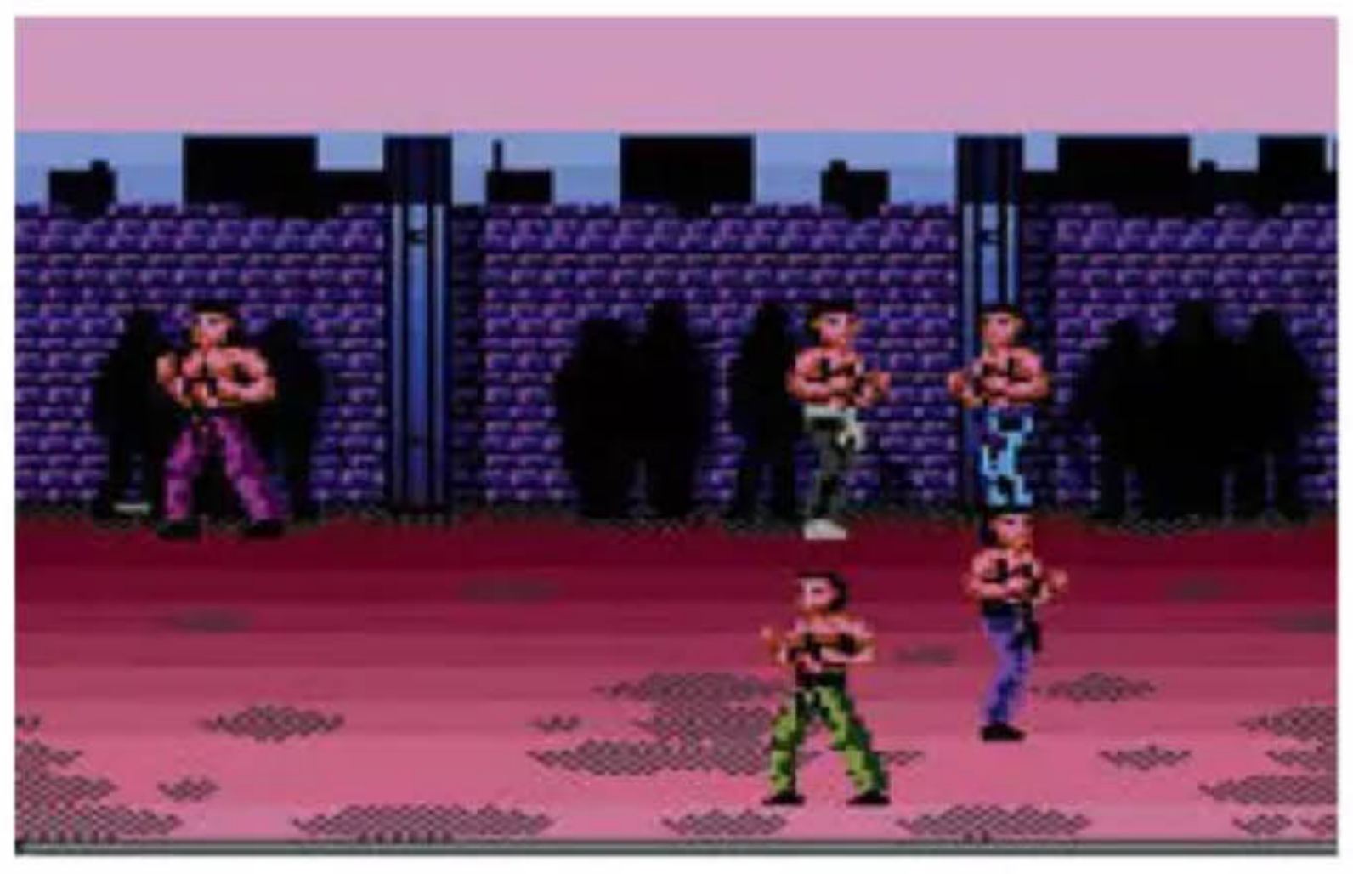
PC DOS

Initially, it looks very nice but instead of trying to scale the sprites it merely stretches them vertically for the foreground meaning they look a bit weird and alien.



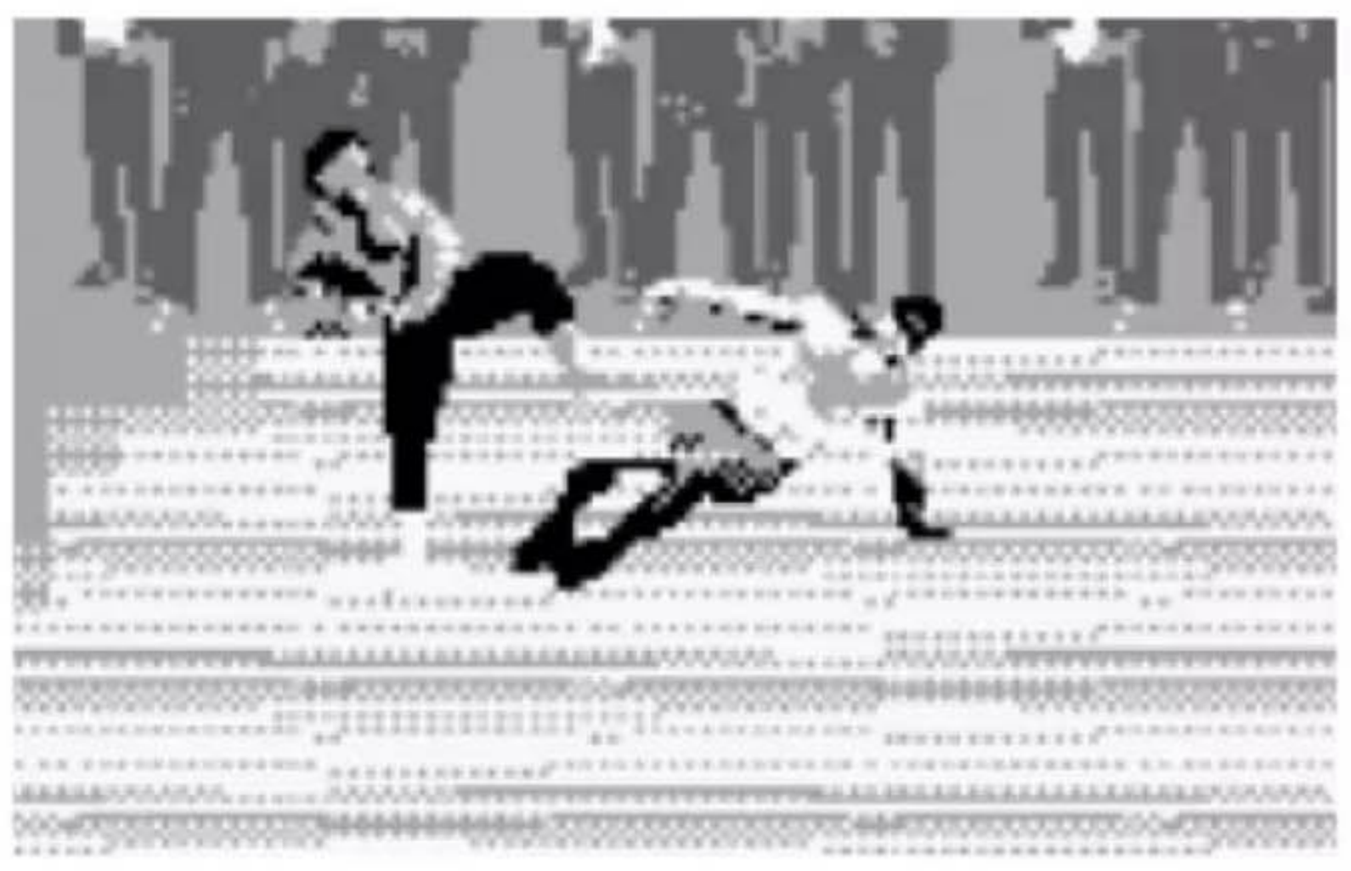
MASTER SYSTEM

The Master System iteration is almost like a whole new game, the redrawn pixel-style graphics bear little resemblance to the coin-op. It's also very dull to play.



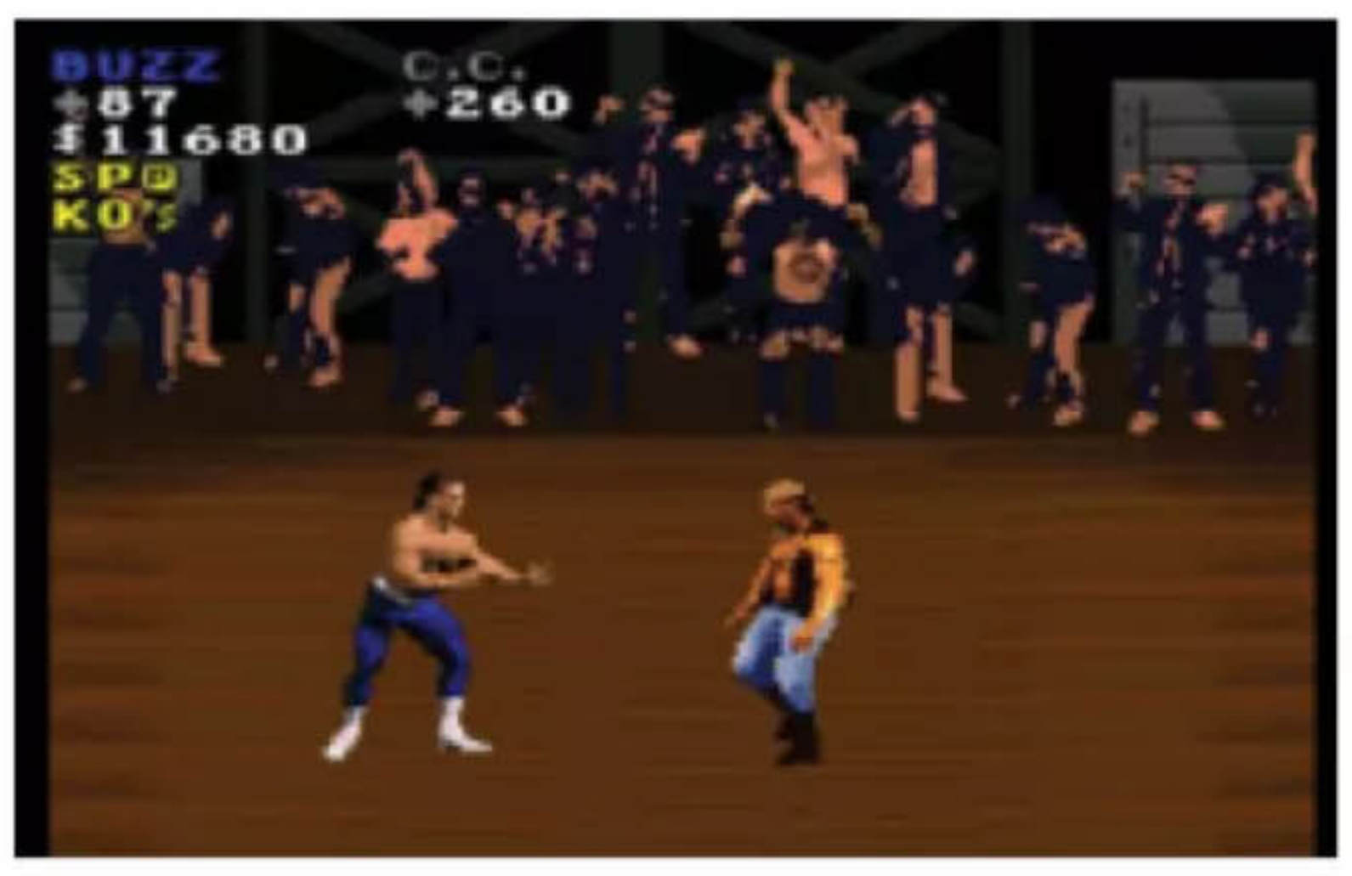
ATARI 7800

It's perhaps unfair to include this version, as only a prototype exists. But it does show a lot of promise with the large sprites and well-drawn backdrop. A real shame it wasn't finished.



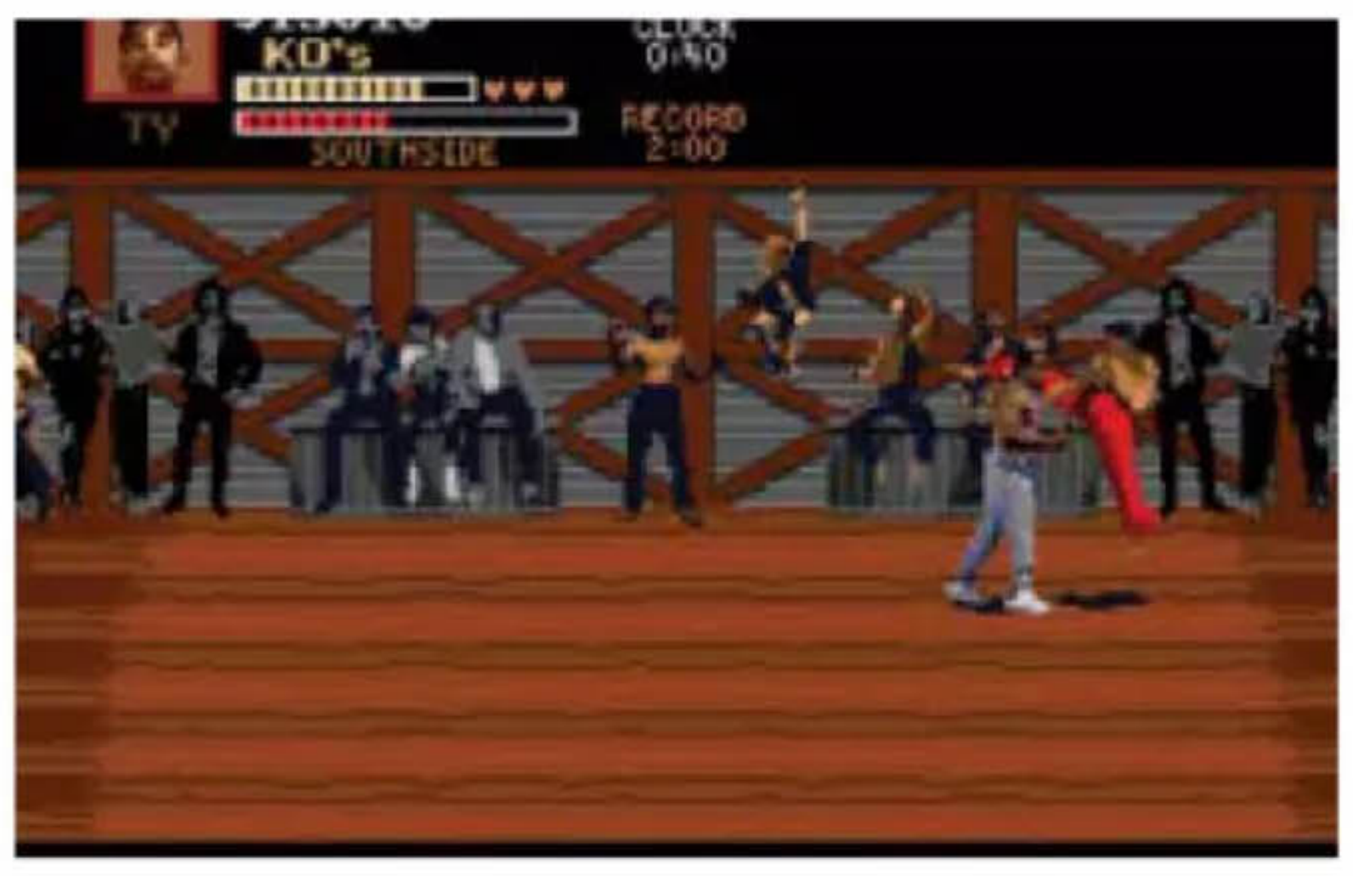
GAME BOY

The Game Boy version is surprisingly faithful considering the hardware. Graphics and sound are both excellent, but it lacks in the speed department. One of the better conversions.



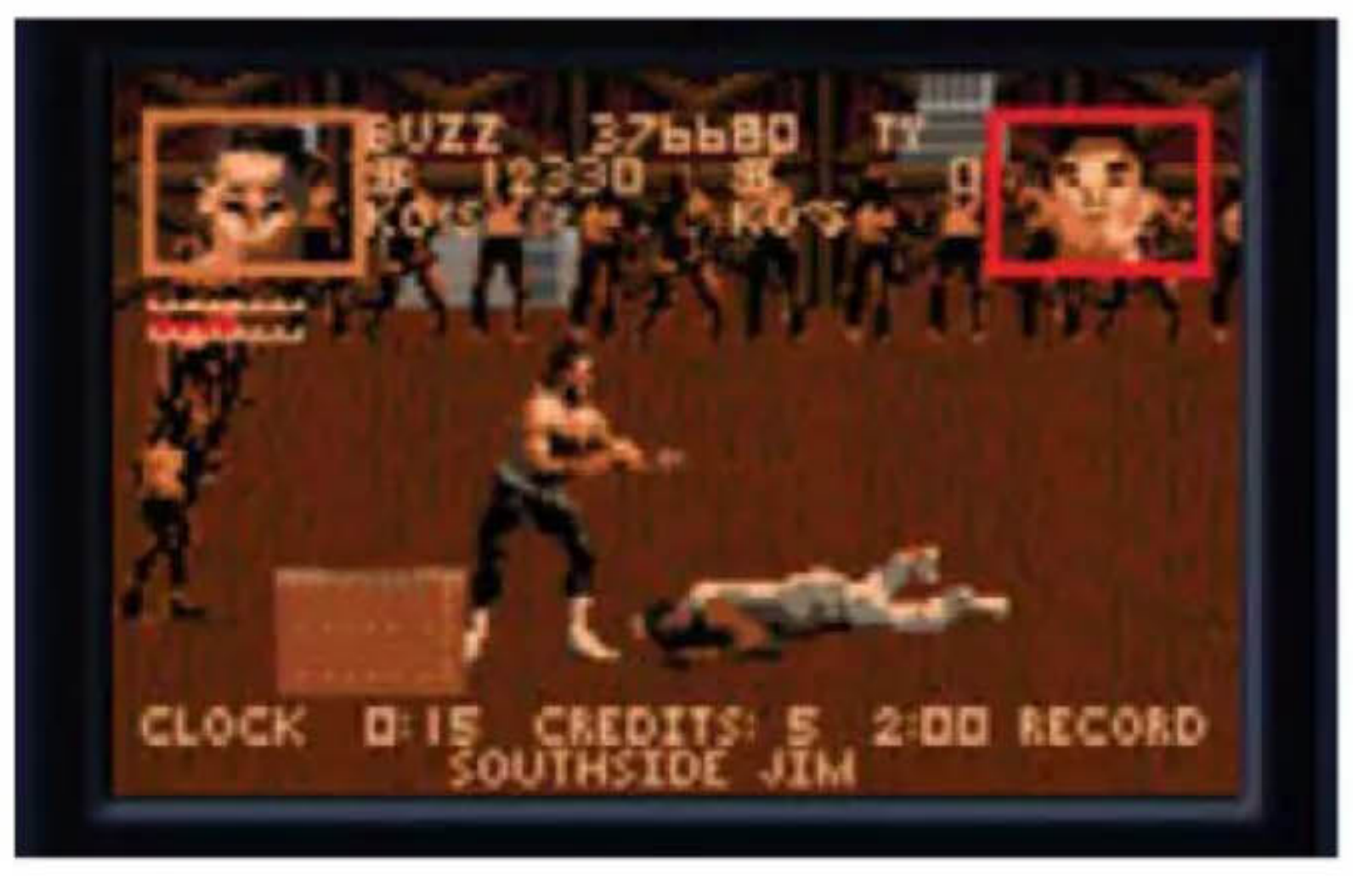
SUPER NINTENDO

An absolute travesty, the SNES should have been able to pull off a fairly decent conversion. But what we have here is a slow, jerky, uncontrollable mess. Truly a great disappointment.



MEGA DRIVE

Dennis Koble and Lee Actor did a superb job of bringing this game to the Mega Drive. The scaling is missing but everything else is here and it plays exactly like the original.



ATARI LYNX

The Lynx was ideally suited to this game with its in-built hardware scaling abilities and it pulls off the game well. Not only does it play like the arcade game but it looks like it too.

game was soon converted to a multitude of home platforms, hoping to cash in on the success of the arcade game, but was met with very mixed results. One of the very few versions that got it right was the one produced for Sega's Mega Drive. It was released on Atari Games' own Tengen label and programmed by Dennis Koble. Dennis was not only an ex-arcade game coder himself, having worked on titles such as the popular Sprint series as well as the game that inspired Star Raiders: Starship, while at Atari Games, but he was also a close friend of Gary Stark. This relationship meant that Gary shared all his source code for the arcade game with Dennis and, as both the Mega Drive and the coin-op used a Motorola 68000 CPU, some of the code could then be reused.

But converting such an advanced game to the more limited Sega hardware caused its fair share of problems as Dennis explains. "Given the technical limitations of the Genesis, we knew it would be a challenge but it was an exciting opportunity at the same time. It was the very first game that made use of photographed people and attempted to animate them. It was revolutionary at the time. The limitations on the processing power and storage on the Mega Drive were so severe compared to the arcade version that although we considered reproducing the scaling it just became obvious from the onset that it wasn't going to be possible, so we did the best we could."

Atari's landmark title seems to be a Marmite game. We asked Gary why he thought that was. "I don't know," he admits to us, "The only way you can truly judge a game is by how much money it makes, and Pit-Fighter was extremely successful. So that tells me all I need to know!"

THE MAKING OF ALIEN VS PREDATOR

IT WAS THE 'OTHER' REASON TO OWN AN ATARI JAGUAR, AND STILL FEATURES REGULARLY IN TOP-TEN LISTINGS OF THE SCARIEST VIDEOGAMES OF ALL TIME. REBELLION FOUNDERS JASON AND CHRIS KINGSLEY, AND ATARI PRODUCER JAMES 'PURPLE' HAMPTON TALK TO MIKE BEVAN ABOUT DESIGNING A CULT CONSOLE CREATURE FEATURE

The Alien movies have been one of the most influential of all film franchises for the videogame industry. A key inspiration for the 'bio-organic' style of a huge number of 2D titles in the Eighties and Nineties, notably the 'Giger-esque' visuals of R-Type and Turrican, the distinctive, dark futurism of Ridley Scott's original Alien inspired countless budding pixel-artists. The saga has spawned dozens of licensed arcade and domestic videogame titles, from platform shooters to scrolling beat-'em-ups and lightgun games, and a range of successful first-person corridor shooters on various different systems. The Jaguar outing of *Alien Vs Predator* represents perhaps the biggest leap the licence ever made in the gaming world, throwing in Fox's second most famous creature, the Predator, and presenting, for the first time, a highly realistic, first-person rendition of close-combat inter-species warfare.

The interactive clash of franchises promised a whole new level of immersion for movie fans – facehuggers bursting onto the screen, Predators decloaking right before your eyes, and the whiplash tail of xenomorphic terrors, all experienced from a perspective planted firmly amid the chaos. Developed across three separate continents, with design and programming teams from Oxford-based developer Rebellion, and support from Atari in Sunnyvale, California, the game was an intriguing, and sometimes strained, exercise in Anglo-American relations. At its best, *Alien Vs Predator* rsuccessfully e-creates aspects of the strongest two *Alien* movies, combining the fear and tension of the original film with the all-out gunplay of *Aliens*. But at the time of its inception, the Atari Jaguar was only at prototype stage, and it wasn't even a certainty that the game would be a first-person shooter, or even appear on the system at all.

A brand new console

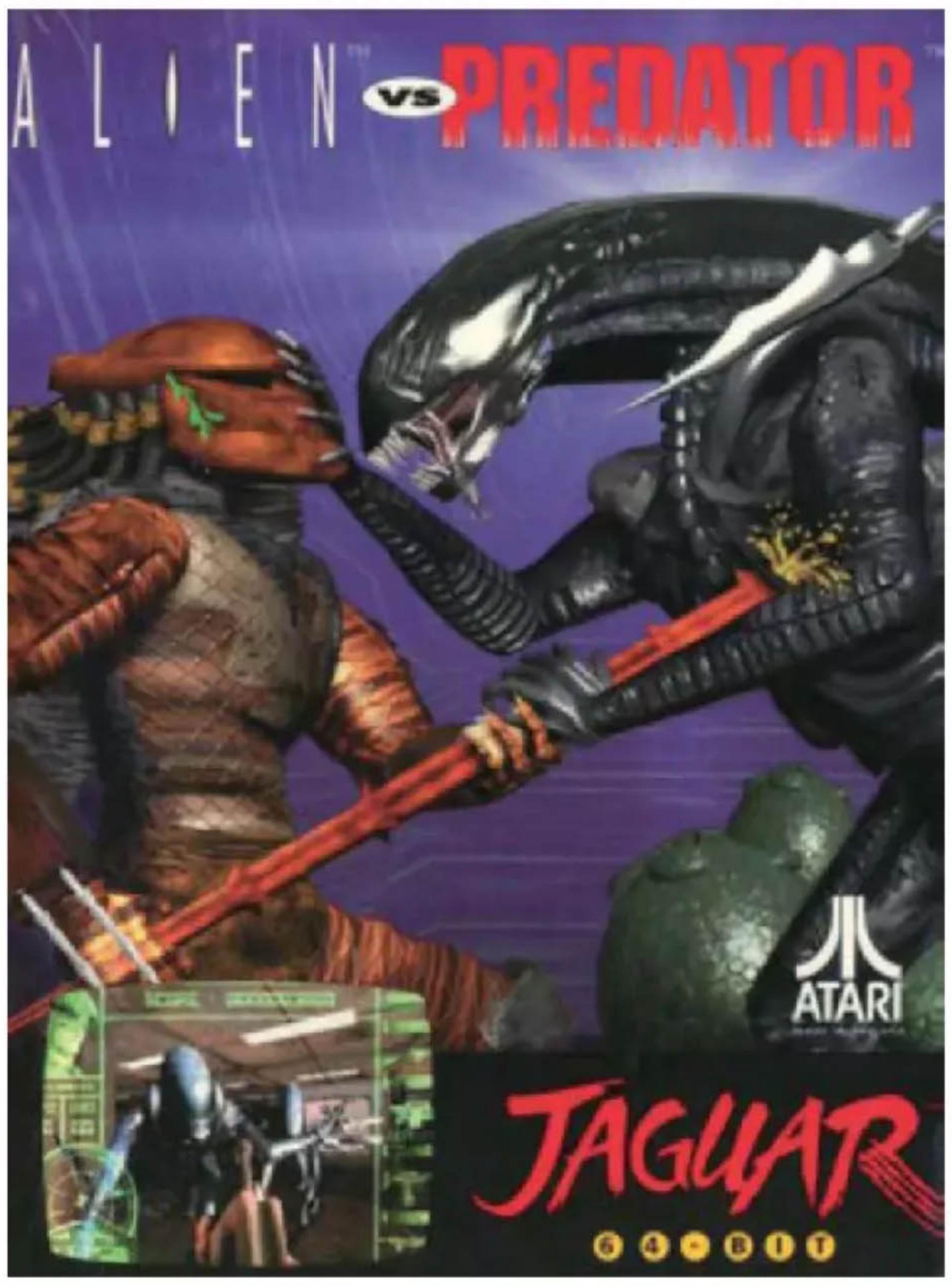
Rebellion's Jason Kingsley remembers the moment he first learnt of the existence of Atari's 'top secret' console, evidently a surprise to even Atari's own UK-based personnel at that time. "We went to see Alistair Bodin of Atari in their huge office building and warehouse in Slough (complete with brown Hessian wallpaper and not many people in the office), to present a 3D dragon flight simulation for their new Falcon computer," he reveals. "He thought it looked great and asked Bob Gleadow, Atari's UK managing director, to come down to see it right away. When Bob saw it, he said that it could be a great title for their new console. Alistair was surprised and asked, 'What new console?' Bob replied, 'The Jaguar'. It was the first anyone outside of a very small group in North America had heard of the new machine."

> "WHEN BOB SAW IT, HE SAID THAT IT COULD BE A GREAT TITLE FOR THEIR NEW CONSOLE"
> JASON KINGSLEY

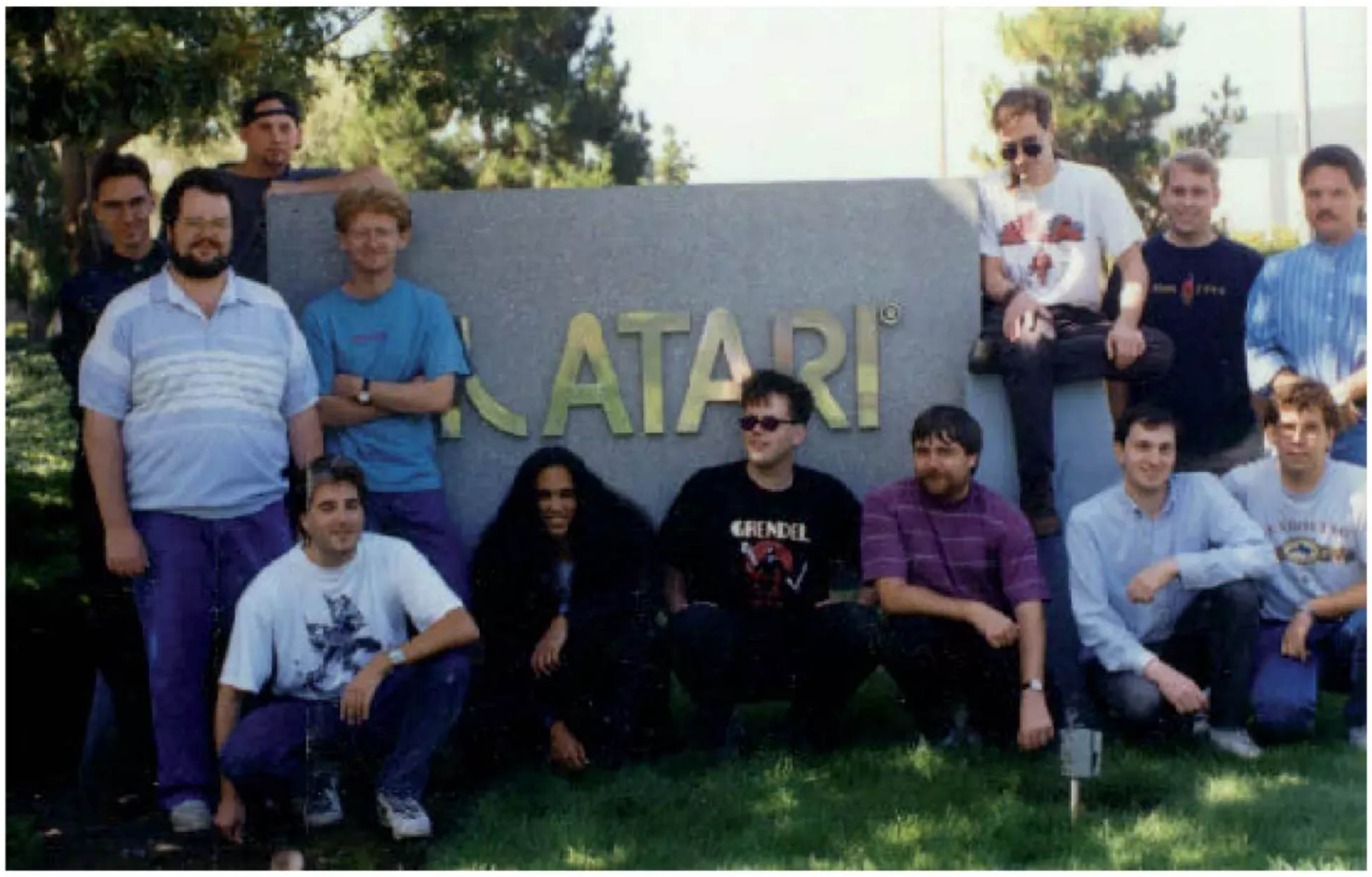
James Hampton, Atari's producer for *Alien Vs Predator*, reveals that the project originally started out on Atari's handheld console – the Lynx. "When I first started working at Atari, in the autumn of 1992, one of my first assignments was taking over as producer on a number of Lynx games. One of these was *Alien Vs Predator*, being developed by UK-based company Images. The Lynx *Alien Vs Predator* team had been assembling a demo that featured a game with a Colonial Marine and a Predator going

IN THE KNOW

- **Publisher:** Atari
- **Developer:** Rebellion
- **Platform:** Atari Jaguar
- **Year released:** 1994
- **Genre:** First Person Shooter
- **Expect to pay:** £25+ ($40)



» An early Amiga-based version of LightWave was used to create the 3D-rendered image that became the game's box art.



» This team photo was taken in front of Atari's offices in Sunnyvale during the the summer of 1994 and features many of the *Alien Vs Predator* team. (From left to right) Nathan Brenholdt, Dan McNamee, Lance Lewis (with cap), Mike Beaton, Hank Cappa, Keoni Los Banos, James 'Purple' Hampton, Andrew Whittaker, Andrew Keim, Sean Patten (sitting on sign with sunglasses), Paul Foster, James Grunke.

through corridors of an Alien-infested space station. The Lynx games got put on the back burner, however, as Atari was shifting its production efforts over to the Jaguar launch."

The Lynx game was never completed (although a prototype of it does exist), and Atari's management briefly considered a version of Activision's Super Nintendo *Alien Vs Predator* game, a *Final Fight*-style 2D beat-'em-up, as an alternative project for the Jaguar. "I didn't think this direction represented the characters and the universe very well and I was eager to find a way to improve the design," recalls James. "As I dug deeper into the project, I discovered numerous references to elements from the Dark Horse comic books, elements that Atari did not have rights for. I used this as a reason to change creative direction, and presented an alternative approach to the internal Atari legal and executive departments, and then to our sub-licensor Activision and our partners at 20th Century Fox."

In the UK, designer and programmer Andrew Whittaker, who had collaborated with *Alien* designer HR Giger on the PC horror-adventure *Darkseed*, was approached by Atari to work alongside Rebellion. Giger had personally recommended him for the new game. Andrew would spend long hours discussing the behaviour and many character nuances of the Aliens with their creator, and the Predator's motivation and design with Stan Winston's movie effects department as well as Fox.

The decision to allow players to experience the game through the eyes of three different characters was one of the first concepts that the Rebellion team hit upon. "Yes, that was Chris and my idea completely," says Jason. "As well as playing the Marine, we also wanted to play the bad guys (Aliens) and the neutral guy (Predator). What it meant though was making three games in one, so it was a very ambitious and challenging game to create."

The texture kings

Another significant breakthrough was the use of digitised textures – modelled from visual references from the films – for the game's environments. "We had already succeeded in getting some texture mapping in *Eye Of The Storm* for the PC, and were excited about the visuals we could get using this technique," explains Chris Kingsley, Rebellion's technical director. "One particularly tough problem we faced was how to create realistic looking texture maps – up to that point all the graphics in games had been hand drawn."

MAIN PLAYERS

COLONIAL MARINE

COLONIAL MARINE

Mission: Initiate the base self-destruct and escape. The Marine (christened 'Lance Lewis' after one of Atari's level designers) is the weakest and slowest of the three 'species' so must rely on his resourcefulness to survive. With no weapons or security clearance at the start of the game, players must search for arms, tap into the base computer network and security system to access higher levels, and use air ducts and elevators to reach the safety of the escape pod.

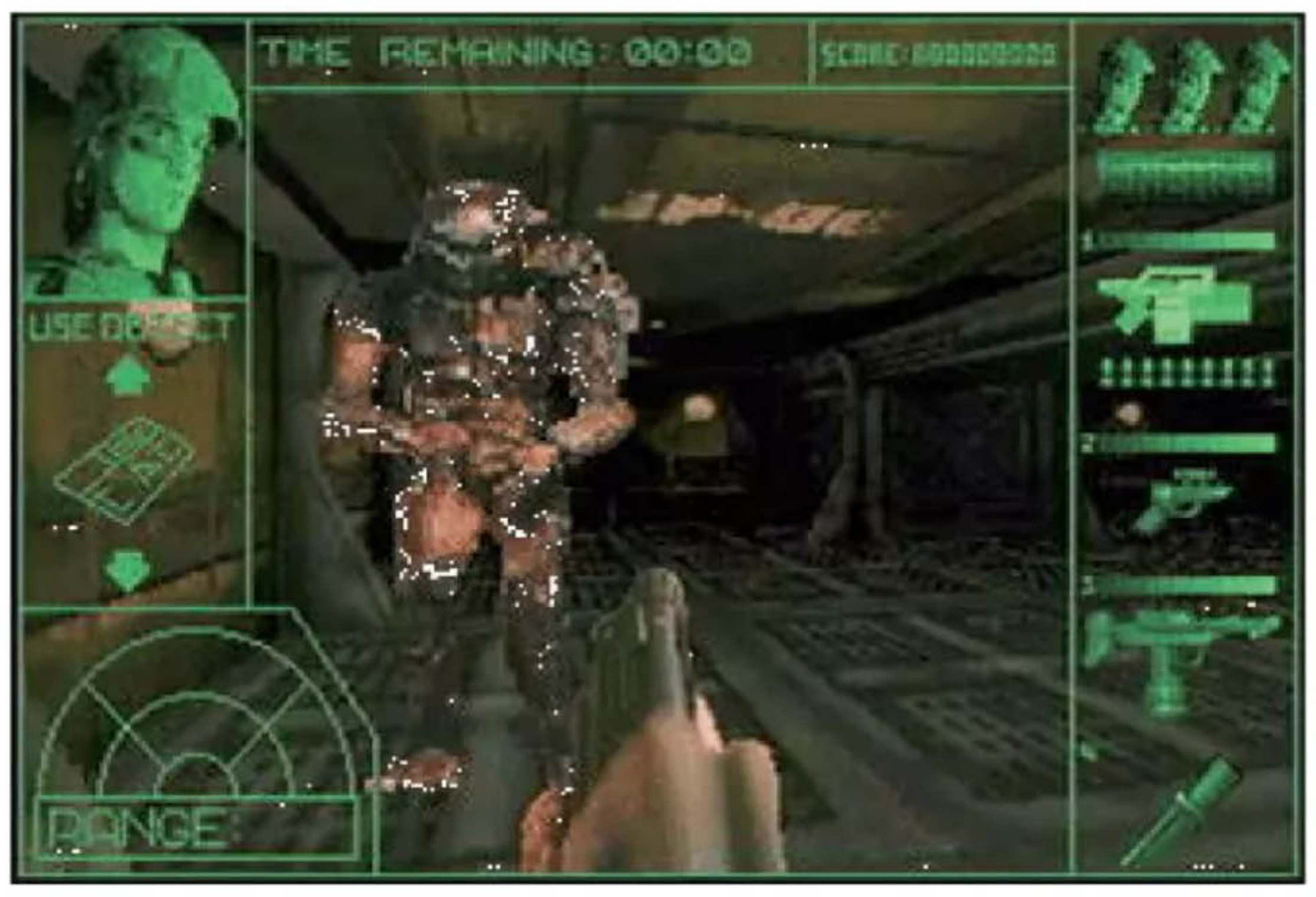
ALIEN WARRIOR

Mission: Rescue the Queen from the Predator's huge ship. With endless fangs and a carbonite exoskeleton, Aliens can tear through the base dispatching weaker species with ease. The main advantage of playing as the Alien is the ability to 'cocoon' unfortunate Colonial Marines, using a swift claw and tail-swipe combo, which can then be hatched to provide extra 'lives'. And remember, individual xenomorphs are expendable, it's all about the survival of the Alien breed.

PREDATOR

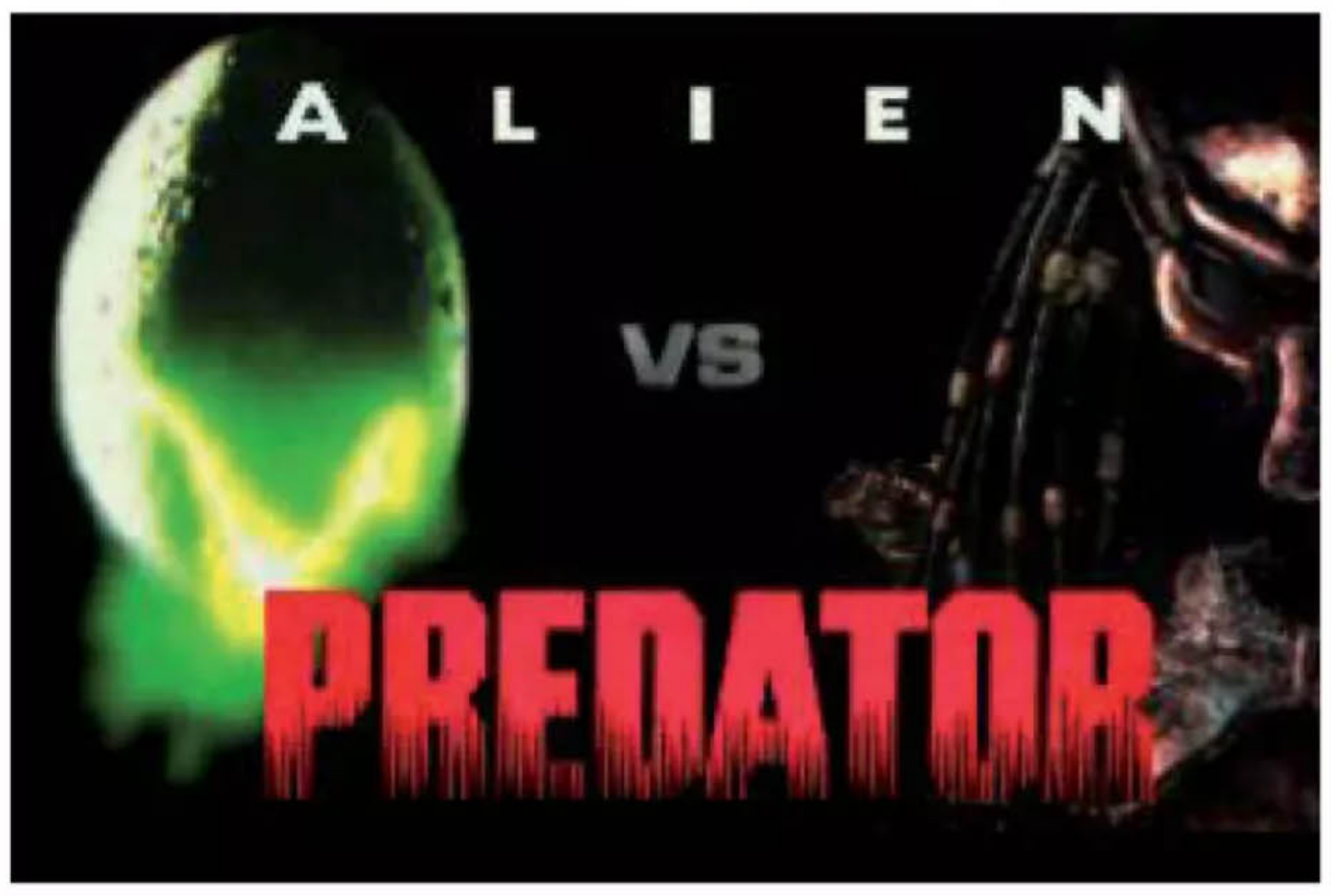
Mission: Claim the skull of the Alien Queen. The Predator has an unusual 'honour' system, which can be used to gain more increasingly destructive hardware, including the infamous 'smart disks' and shoulder cannon weapons. Although the Predator has the ability to 'cloak', killing with honour means doing so while visible, or risk losing 'honour points', along with your weaponry. Because of his bulk, the Predator is the only character unable to use the air ducts.

> "WE WERE EXCITED ABOUT THE VISUALS WE COULD GET"
> CHRIS KINGSLEY

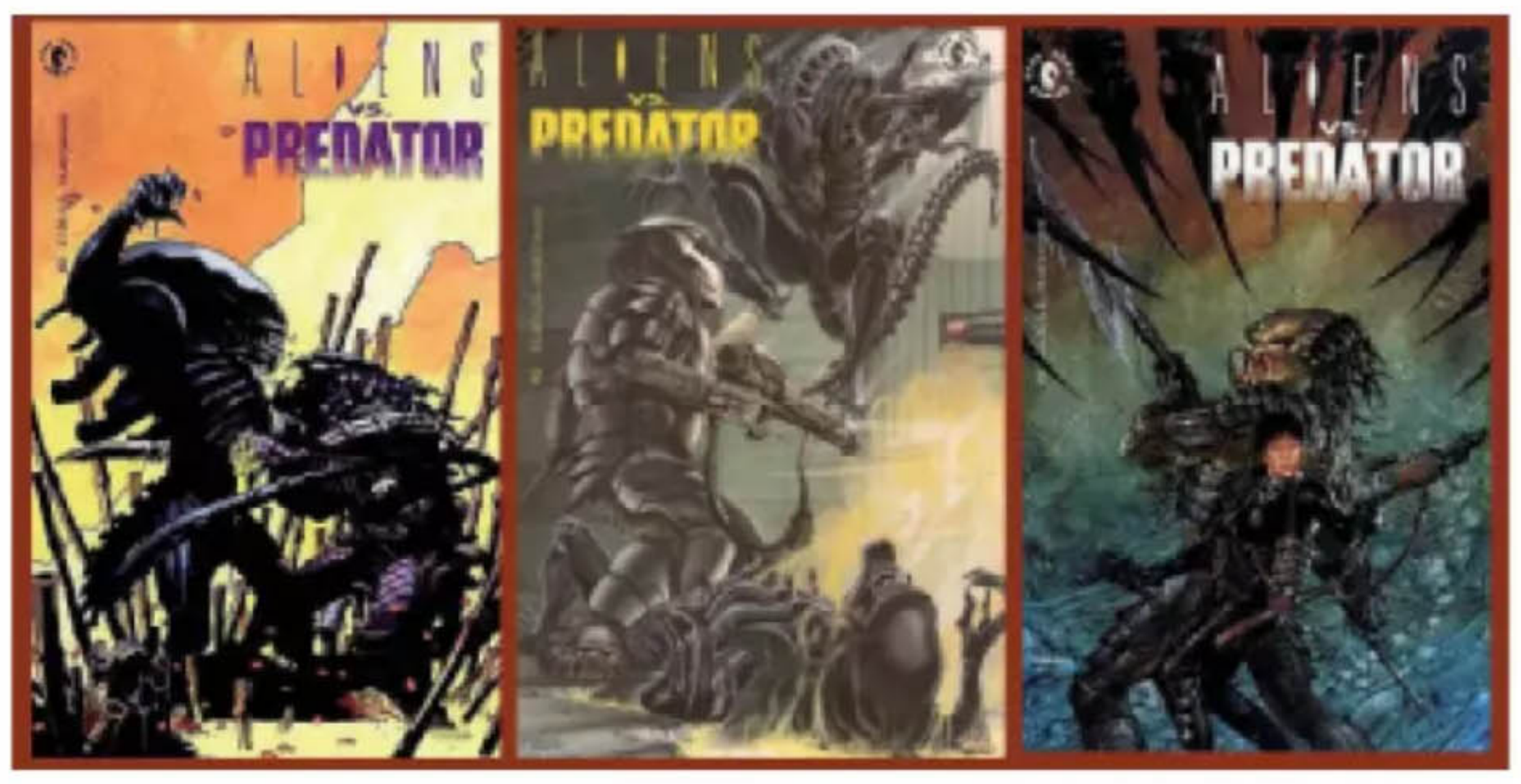


» A prototype version of the game, featuring an early HUD layout, blockier character models and 'lives' rather than a health bar.

» James Hampton (producer, Atari) in front of an Alien Queen during a visit to London's much-missed 'Alien War' attraction, February 1994.



» This movie-poster-inspired title screen was later replaced by the rendered art used in the game's packaging.

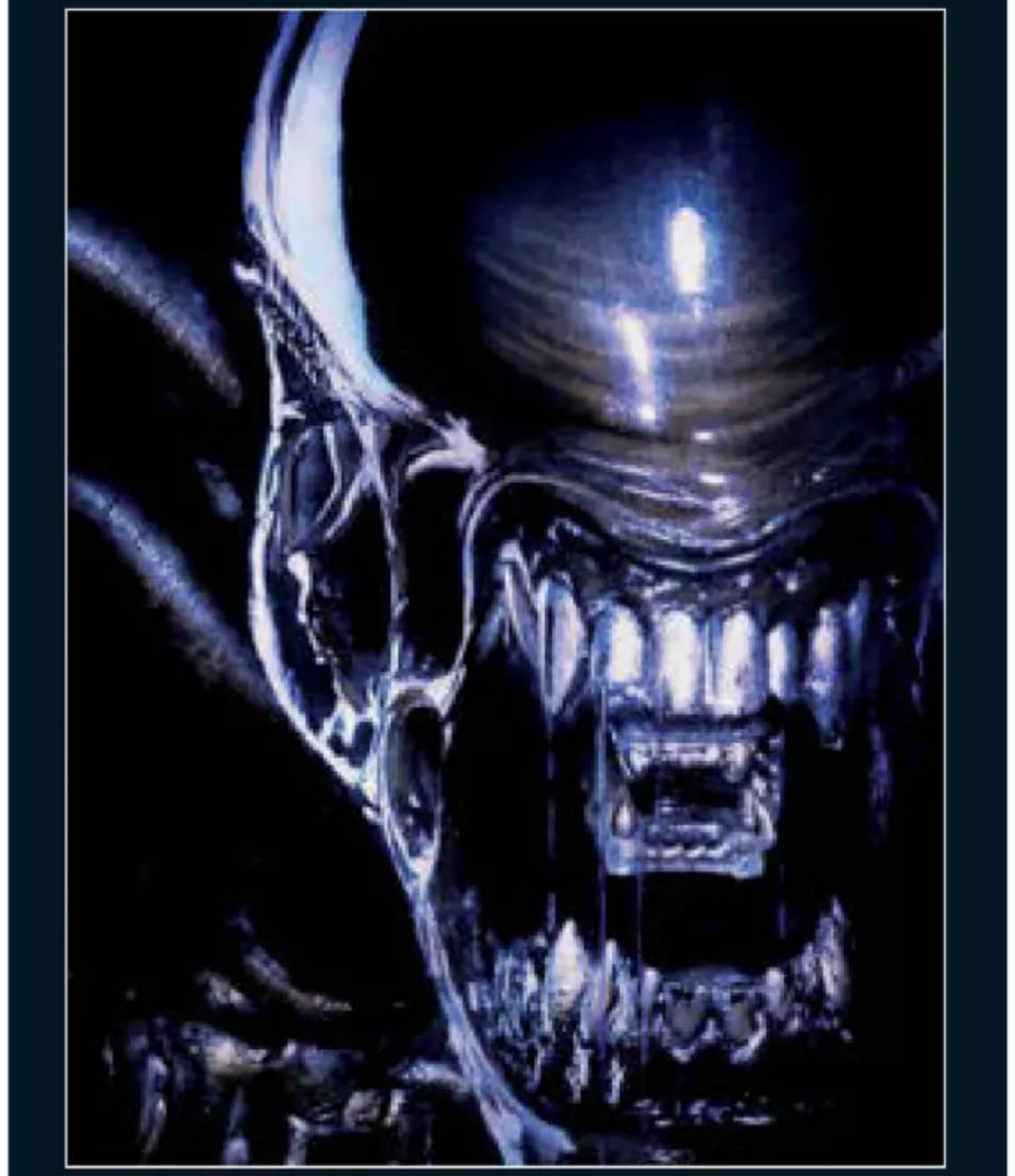


» The original 1990 Dark Horse comic series that kick-started a titanic movie-crossover franchise.

LOVING THE ALIEN

Retro Gamer asked Jason Kingsley of Rebellion, and Atari producer James Hampton how their respective teams had prepared for the unenviable task of re-creating the worlds of the Alien and Predator on the Atari Jaguar. "We watched the movies again and again on VHS tape," says Jason. "We had to cope with the terrible freeze-framing of VHS. We even photographed the TV screen to get stills – not that easy to do with the awful freeze-frame and CRT interlacing. What we discovered was the visual effects in the movies were created in several different ways, and at times even the same effects were created using two or three completely different techniques. We had to choose the ones that would look best in our game and focused on getting those looking great."

James reveals a similar process for the US team. "We spent a few weeks gorging ourselves on all things Alien or Predator," he says. "We would share ideas for the game during the movie marathons where we watched stuff like the extended editions of Aliens on Laserdisc. And we were lucky to have people like Sean Patten, who became one of the game's designers and is the 'face' of the Marine player character in the Marine HUD. He was a die-hard fan who had built replica models of the Colonial armour, weapons and gear which we used for some of the photo materials in the game."



"Toby and Stuart, the artists at Rebellion, had this cool idea to use photographs of models instead of computer-generated artwork for all of the game," explains James. "The results worked surprisingly well. The walls and floor segments were all tiles that they had made with painted model parts, and they used off-the-shelf model kits of the Alien and Predator characters to create a kind of 'stop motion' animation for all of the frames of creatures' movements in the game."

James helped the British art department by thoughtfully smuggling a handy Xeno-model out of the US while he was overseas. "UK Customs wouldn't allow them to receive a model of the Alien Queen that they had ordered by mail, and so on one of my visits over to their offices in Oxford, I went to Mr Big's Toyland in Waltham, Massachusetts, tracked down the model, and smuggled it in my suitcase to get it to them in time!"

> "WE ENCOURAGED THE TEAM TO PLAY GAMES LIKE WOLFENSTEIN AND DOOM"
> JAMES HAMPTON

"We created all the art in Oxford," adds Chris. "We did this by first building small-scale models of the panels. These were 9cm by 9cm squares of cardboard with bits of paint, straws, plastic gubbins stuck and moulded in, then photographed by Jason in 35mm. We then processed and scanned the photographs in using a flat-bed scanner, and finally touched them up by hand in a paint package, and added any transparent areas. We still have most of the panels in our archive."

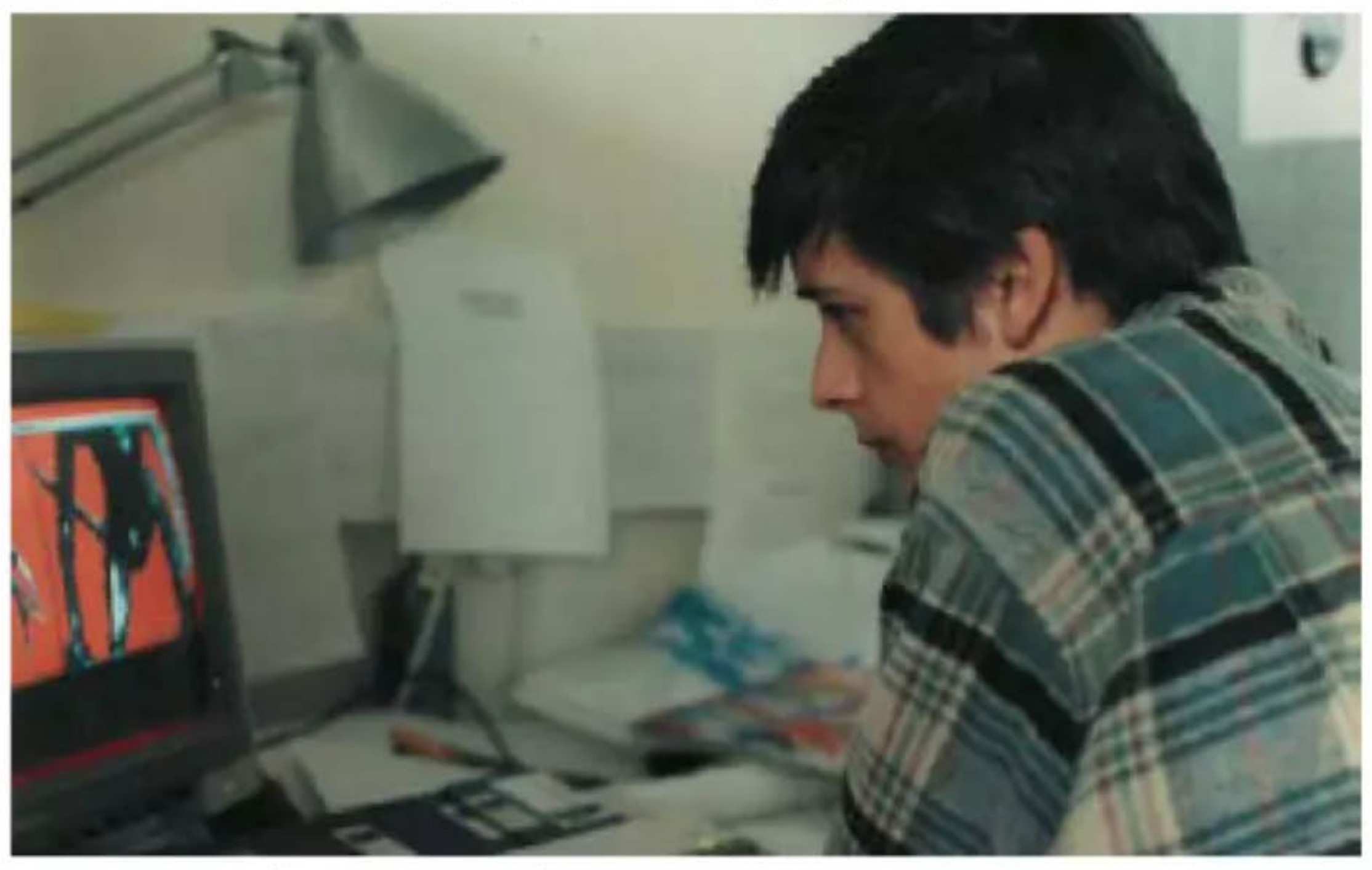
Working with a console that was still effectively in the development stage was an unusual process for both teams. Andrew remembers constantly rewriting various graphic routines as the Jaguar's hardware was being finalised, before hitting on the idea of coding new game elements, then suggesting the hardware features to implement them. "We made numerous design decisions based on what was technically feasible, trying to play to the strengths of what we had working," admits James. "In some instances what may have been a limitation turned into an identifying feature in the game.

"Game over man"

So when we found that the memory limitations weren't going to let us have a movie-like symphonic score, we opted to go the other direction, and create an eerie soundscape from the ambient space station noise. The result added a lot of dramatic tension and captured the spooky feeling of being alone – until a threatening Predator clicking sound appeared nearby."

As for the role of id's games – *Wolfenstein 3D* and *Doom* – as an influence on *Alien Vs Predator*, Jason and Chris are quick to deny that they had much of an impact, if any. "We weren't aware of *Doom* at that stage, and only halfway through development did we hear about *Wolfenstein*, so we were using different reference points (step-based dungeon exploration titles) adding realistic textures and vision modes, and adding a dash of acid blood to block your path." James, however, acknowledges a certain level of influence while working on *Alien Vs Predator*, at least from his own team's perspective. "Before starting at Atari, I had spent time playing the first 'episodes' of *Wolfenstein* that were being released on bulletin boards," he admits. "This kind of first-person gameplay definitely influenced me, and over the course of the AVP development cycle, we encouraged all of the team

» Rebellion founders Chris (left) and Jason Kingsley, summer 2008.



» Stuart Wilson (artist, Rebellion) creates the animation frames for the Alien Warrior model.

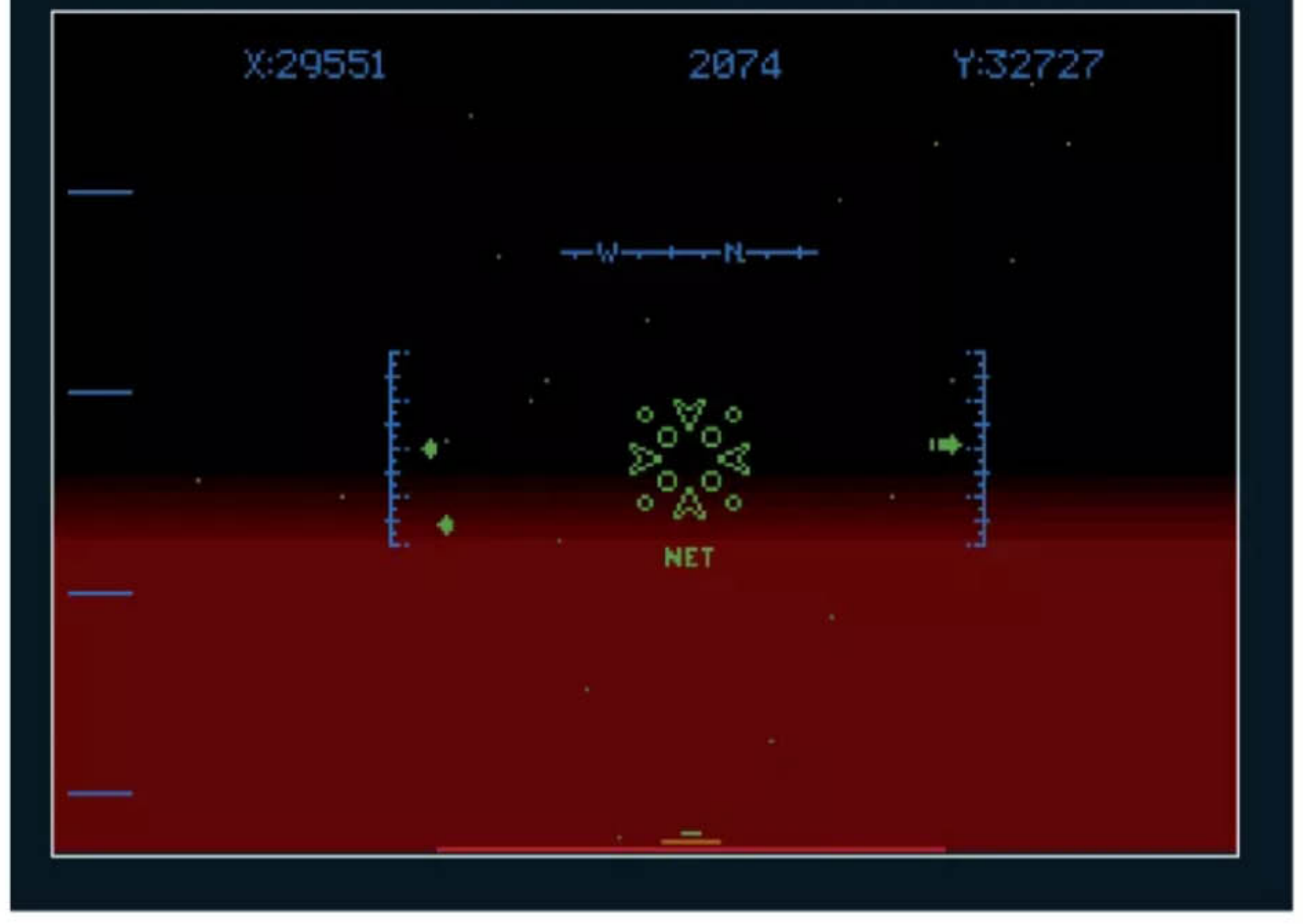
DEVELOPER HIGHLIGHTS

Eye of the storm (PICTURED)
Systems: Amiga, PC
Year: 1993

Checkered flag
Systems: Jaguar, Lynx
Year: 1995

Aliens vs predator
System: PC, MAC, GBA
Year: 1999

Rogue trooper
System: XBOX, PC, PS2
Year: 2006



MEMORY LAPSE

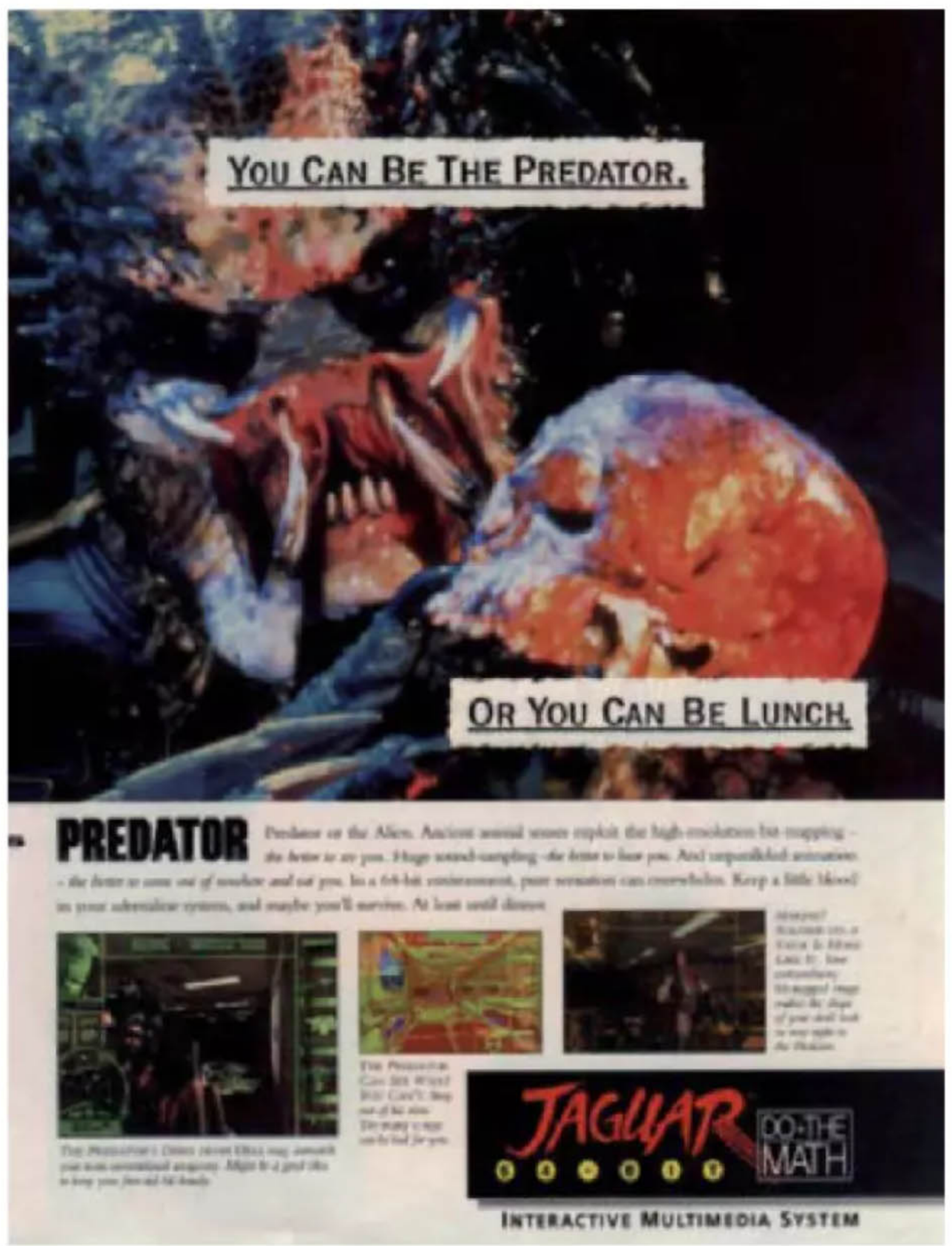
Trying to squeeze the game into a standard 2MB Jaguar cartridge proved quite a headache for both teams, with Rebellion in particular spending a lot of time compressing textures and data to fit. But, unknown to the UK team, Atari was about to make an unusual u-turn.

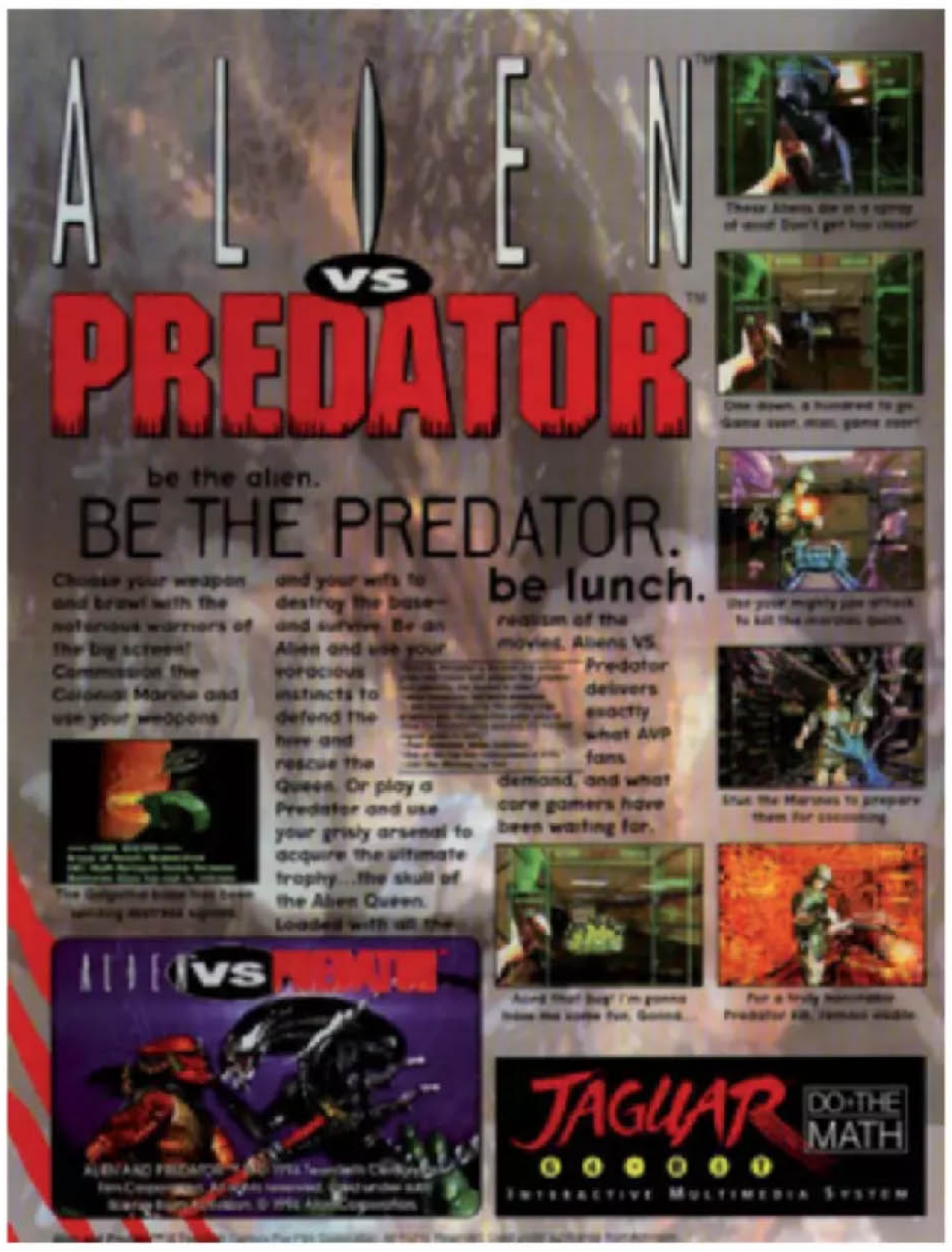
"The photorealistic textures looked great but also took up a lot of space and eventually we ran out of room for all of the components of the game on the original cartridge size," explains James. "With some pressure from Fox (to add some additional Alien animation) and some campaigning internally, Sam Tramiel again made the 'right choice' and let us double the cartridge size.

The decision came at the 11th hour, about a month before the game was due to be sent to manufacturing, and we used most of the space for extra audio samples throughout the game. This allowed us to add in more audio effects, which really brought the game together and pushed it to a new level. The extra space also allowed us to include some nice touches like adding Sandra Miller's recorded dialogue, who in addition to being married to Richard Miller, one of the chief Jaguar hardware engineers, added her distinctive British accent for the space station's computer voice."

ALIEN VS PREDATOR
JAGUAR

» The pub in this interlude is of course The Star. "It was Brid's trendy pub," Paul assures us. "No sawdust and few fights."


YOU CAN BE THE PREDATOR.
OR YOU CAN BE LUNCH.
PREDATOR
JAGUAR
DO THE MATH
INTERACTIVE MULTIMEDIA SYSTEM


ALIEN VS PREDATOR
be the alien.
BE THE PREDATOR.
be lunch.
JAGUAR
DO THE MATH
INTERACTIVE MULTIMEDIA SYSTEM

to play games like *Wolfenstein* and *Doom*. We envied the network gameplay, and we always speculated what it would be like to make a head-to-head version of AVP, which wasn't feasible in the time frame we had."

Andrew wanted to add artificial intelligence like 'pack-hunting' behaviour for the Aliens, which would work to lead unwary players into traps – a feature he had christened 'Alien Chess'. In the long run this subtle feature would distinguish the game from rivals like *Doom*, whose monsters would simply become active when the player approached, rather than actively chase or lie strategically in wait when the player entered their virtual environment.

In the spring of 1994, the game reached a critical point in its development. "Rebellion had got the game into a 'first playable' condition, where you could walk around a randomly generated maze," remembers James. "The photorealistic look of the models really worked well, however, there was no structure or gameplay and the project was reaching the end of its original schedule and budget. To his credit, Sam Tramiel, the president at Atari at the time, resisted the urge to cut all the game features and just 'ship it', and followed my plan to push the schedule to a fall release and bring Rebellion programmers Mike Beaton and Andrew Whittaker to California to work on site for the summer."

> "THERE WERE A LOT OF POLITICS AT THAT TIME, AND MANY ARGUMENTS ABOUT CREDITS"
> JASON KINGSLEY

The end of the line

Andrew took the 'long way round', with a (previously scheduled and unavoidable) business visit to Kuala Lumpur, where he set up a temporary development station at the home of his Malaysian host. With team members split between locations at Rebellion and Atari, and sometimes at various points across the globe, it was inevitable that things didn't always run smoothly. "There were a lot of politics too at that time, and many arguments about credits and so on," reveals Jason.

There were tales of corporate kindness, too. When the game was finally completed, a grateful Sam Tramiel gave Andrew a hefty bonus, along with the keys to his brand new sports car, and told him to take off for a two-month vacation.

Alien Vs Predator garnered generally favourable reviews on its release, including a 98% rating in US publication GameFan. Edge magazine, however, described the game as "a lumbering, lame and unfocused imitation of *Doom* that only the most masochistic gamers will get anything out of," awarding it a less-than-stellar four out of ten review score. "Oh yes, everyone else gave it a nine out of ten, but Edge didn't!" chuckles Jason. "Everyone is entitled to their opinions, but they also have to face up to criticism of that sort of score from history."

The game was ultimately successful, selling around 300,000 units, and becoming one of the Jaguar's 'killer apps', alongside Jeff Minter's brilliant *Tempest 2000*. "We had a great time working on *Alien Vs Predator*," admits Jason. "It was one of the first titles we worked on as Rebellion. The company has grown from one employee in our basement to over 310 people at multiple locations throughout the UK, and we still love making games."

Perhaps the greatest lasting testament to the Jaguar game is the fact it still ranks highly on lists and polls of all-time scariest videogames (such as a recent fourth placing at Gametrailers.com). "I was at a Comic-Con in San Diego one year, when a fan stopped me because I was wearing one of the '*AVP*' development 'crew' shirts that I had made up for the team," says James. "They shook my hand saying how much they liked the game and how many nights they stayed up all night playing it, scaring the heck out them. Hearing it then, makes me think that all the times we worked all night making the game… it was worth it."

THE MAKING OF TEMPEST 2000

WIRED MAGAZINE DESCRIBED JEFF MINTER AS "THE LAST GREAT ATARI CARTRIDGE PROGRAMMER". HERE, HE TELLS PAUL DRURY ALL ABOUT THE CREATION OF HIS LAST GREAT CARTRIDGE AND HIS ABIDING OBSESSION WITH ATARI'S COLOUR VECTOR CLASSIC

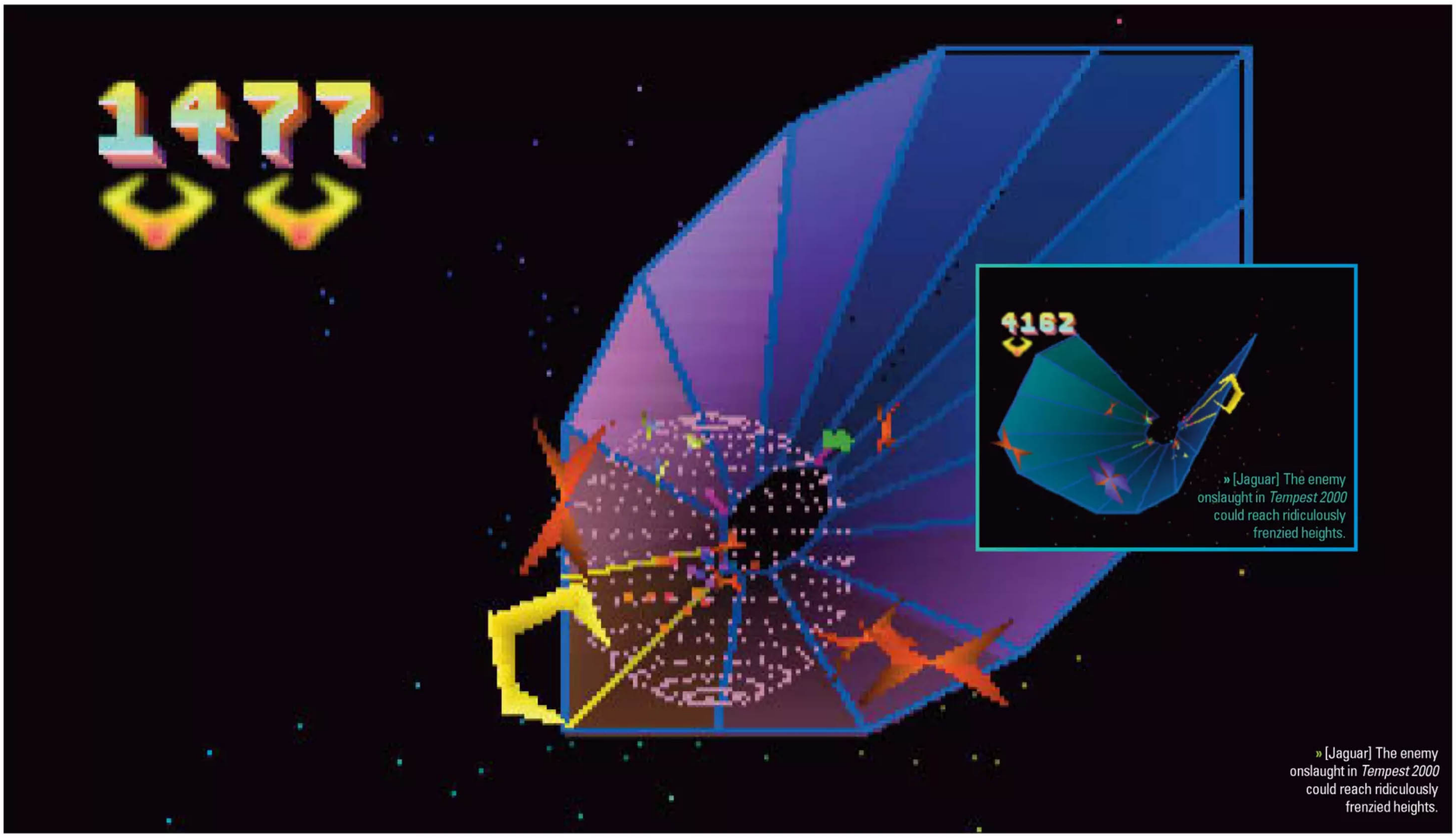
DEVELOPED BY LLAMASOFT
TEMPEST
2000
COPYRIGHT 1981,
1994 ATARI CORP.

IN THE KNOW

- **Publisher:** Atari
- **Developer:** Jack Palevich
- **Platform:** Atari 8-Bit
- **Year released:** 1983
- **Genre:** Arcade Shooter
- **Expect To Pay:** £10+ ($12+)

Jeff Minter grins across the table at us, wiping Guiness froth from his top lip. "I can remember the moment when I first saw Tempest exactly. It was the early Eighties and I was in London with my mum and dad. They went off shopping and I was wandering around Piccadilly Circus. It started to rain so I nipped into an arcade and I saw this machine glowing in the corner. It looked like nothing I'd seen before, [with] these gorgeous colour vectors. I dropped a few coins in and that was that; it was just so darn addictive…"

It was the start of a very long love affair. Written by Dave Theurer and released by Atari in 1981, *Tempest* would become one of Jeff's all-time favourite games



» [Jaguar] The enemy onslaught in *Tempest 2000* could reach ridiculously frenzied heights.

» [Jaguar] The enemy onslaught in *Tempest 2000* could reach ridiculously frenzied heights.

and he even acquired a coin-op machine so he could bring the arcade experience home. However, despite releasing many 8-bit titles through his Llamasoft label that were inspired by arcade hits – *Gridrunner* and *Andes Attack* were clearly homages to *Centipede* and *Defender* respectively – he never attempted to interpret *Tempest* for the home micros of the day. "It's so pure and distinctive looking, if you tried to do *Tempest* with pixels you ended up with something that looked like a spider's web made of Lego bricks," he explains. "If you've ever seen the VCS prototype, it looks like a pair of stripy tights with a prawn on them!"

So Jeff left his beloved blaster well alone until 1992, when he found himself in London again, sitting in a conference organised by Atari to get developers interested in making games for their forthcoming Jaguar console. "They literally read out a list of game IP they owned and asked who was interested in doing what," he recalls with a chuckle. "When they got to *Tempest*, I just put my hand up. I'll have that!"

> "ATARI READ OUT A LIST OF GAME IP THEY OWNED AND WHEN THEY GOT TO TEMPEST, I JUST PUT MY HAND UP"
>
> JEFF MINTER

It seems a rather haphazard way for Atari to decide who would develop which titles for its latest attempt to regain the console crown it once wore, but we like to think Atari saw Jeff's outstretched arm, thrust upward with the enthusiasm of a seven year-old volunteering to be football captain, and knew he was the right man for the job. The company flew him over to the States to show him the hardware, assigned him a producer and sent him back home to Wales with a prototype Jaguar.

"It didn't take me too long to get the Jag doing unfilled vectors and a simple version of the original working," recalls Jeff. "I was inclined to leave it like that as I liked the look but my producer John gently said, 'we'd really like you to fill those vectors up'. So I did. And he was right, too."

Gourad shading

Jeff used a technique called 'Gouraud shading', a function built into the Jaguar's hardware, which gave the game's polygons a colourful, three-dimensional feel. It also allowed him to bring his own distinctive aesthetic to the project whilst remaining faithful to Theurer's original vision. "I didn't want to shit on Dave's ideas by filling it full of llamas," blurts out Jeff. "It was quite a daunting thing to take what I consider to be one of the best designed games I'd ever seen and bolt stuff onto it. I really didn't want to upset Dave by chucking in a load of random stuff."

Being true to your source material without slavishly aping it and extending a game concept whilst never forgetting what made it great in the first place is a demanding task, and one that has confounded many developers charged with updating a classic title. Jeff approached this difficult balancing act by keeping the spirit of *Tempest* alive – the frenetic blasting and web-like structure of levels – whilst introducing a whole host of new power-ups and enemies to the fray. The friendly firepower of AI droids could help fight off the relentless stream of foes and the ability to jump off the edge of a web was handy when overwhelmed by the onslaught, which now included the horn-hurling Demon Head and the fiendish Mirror, a nasty piece of work that reflected your shots right back at you. "They were designed to be right bastards," cackles Jeff.

DEVELOPER HIGHLIGHTS

Sheep In Space (pictured)
System: C64
Year: 1984

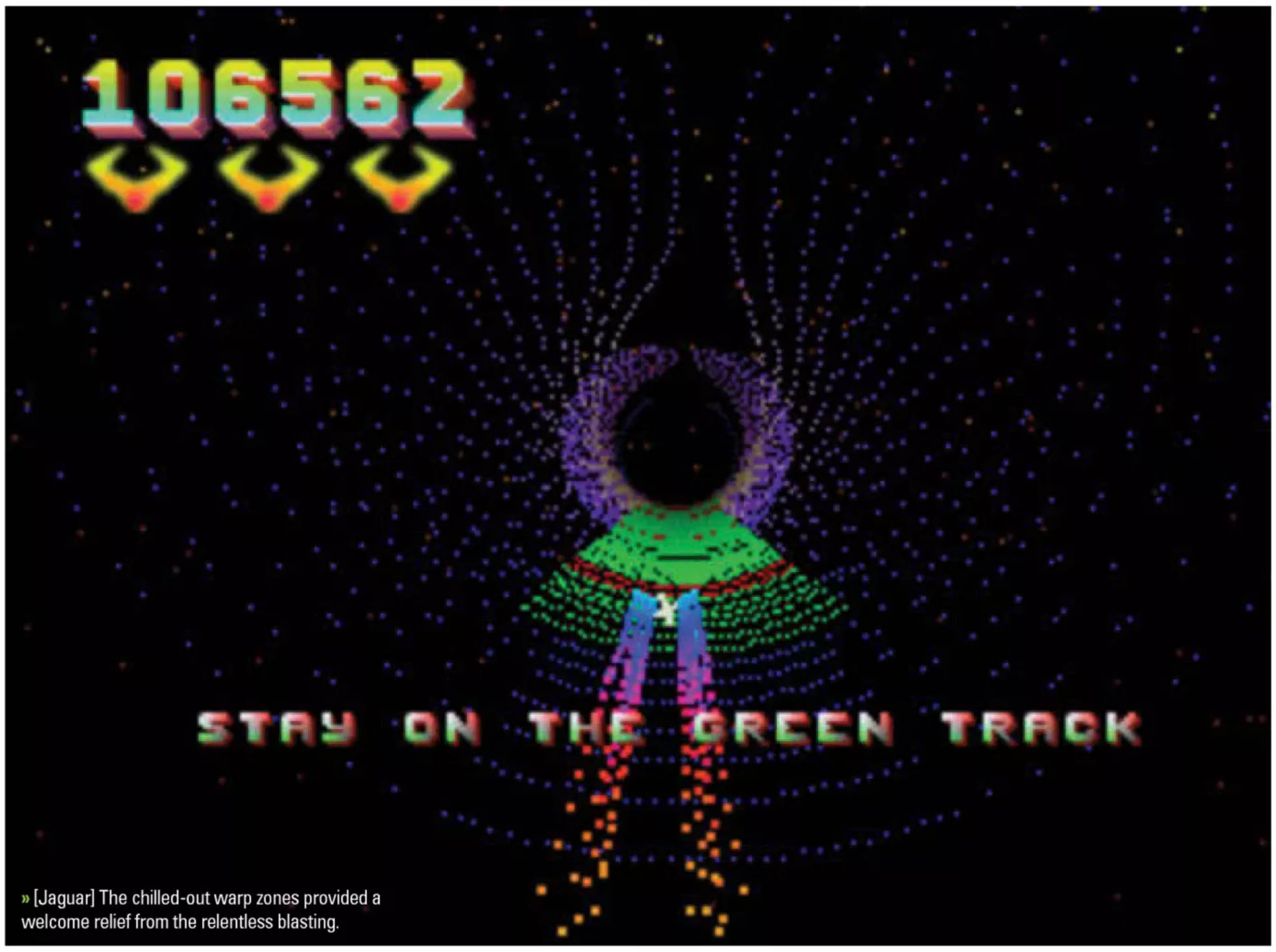
Batalyx
System: C64
Year: 1985

TxK
System: PS Vita
Year: 2013

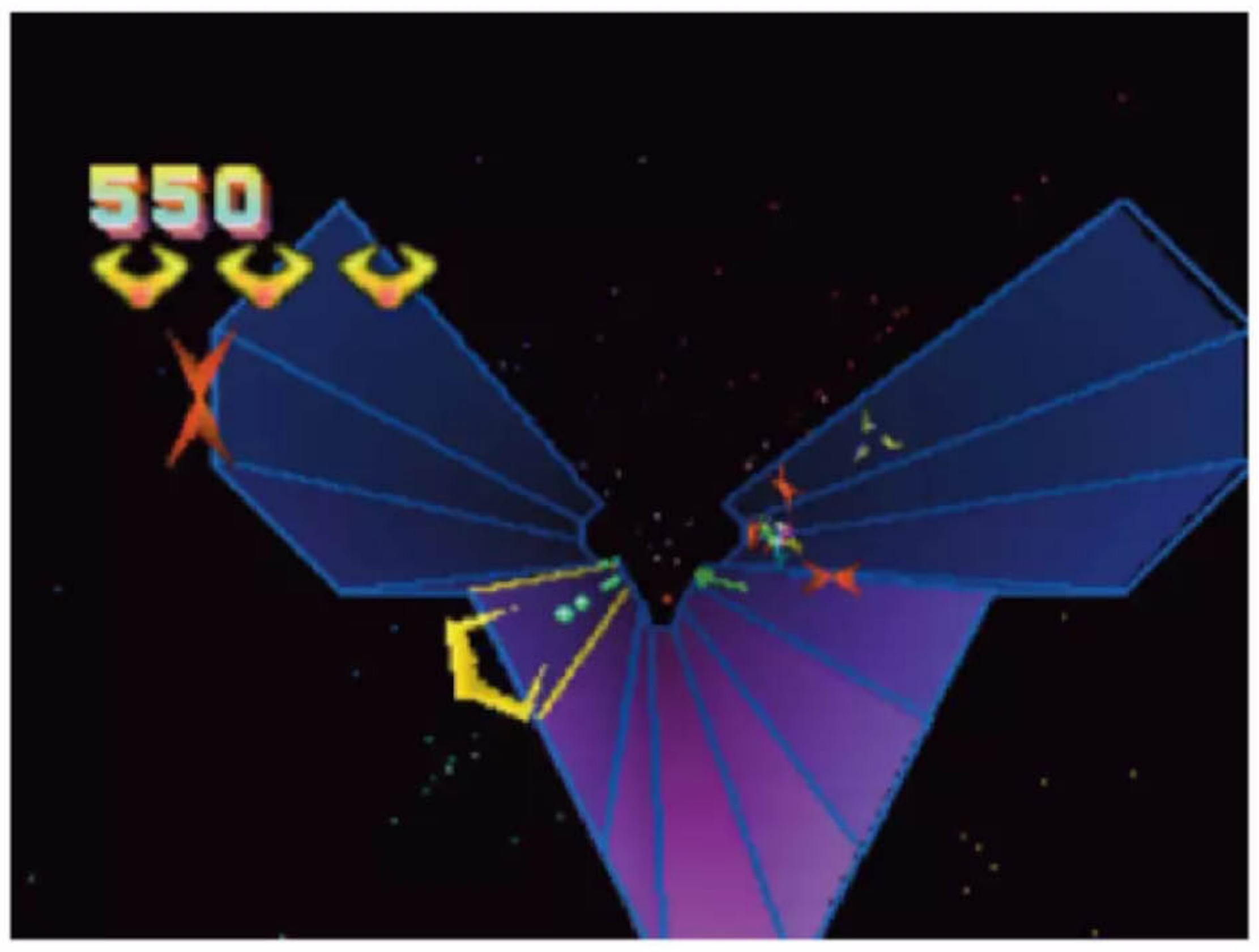
SCORE 1 0007280 SCORE 2 0000000
SHIPS 09 PROXIM CHARGE S
SHIPS 09 PROXIM CHARGE S
SHIELDS 6...SHEEP 3...STOMACH REPLETE

All this frenzied action was accompanied by a banging techno soundtrack, which complimented the melting visuals and particle fireworks on-screen beautifully. "The audio guys were f***ing fantastic," beams Jeff. "I sent them a video of me playing the game with some music that had the feel I wanted. I'd just been introduced to techno and industrial stuff and I think the game needed that vibe. A few weeks later I got back an audio tape with tracks they were working on and I was blown away. I had to phone them up and say, 'this is awesome but will it really sound like this on my Jaguar?' They were true to their word – it was the best f***ing music for a game ever!"

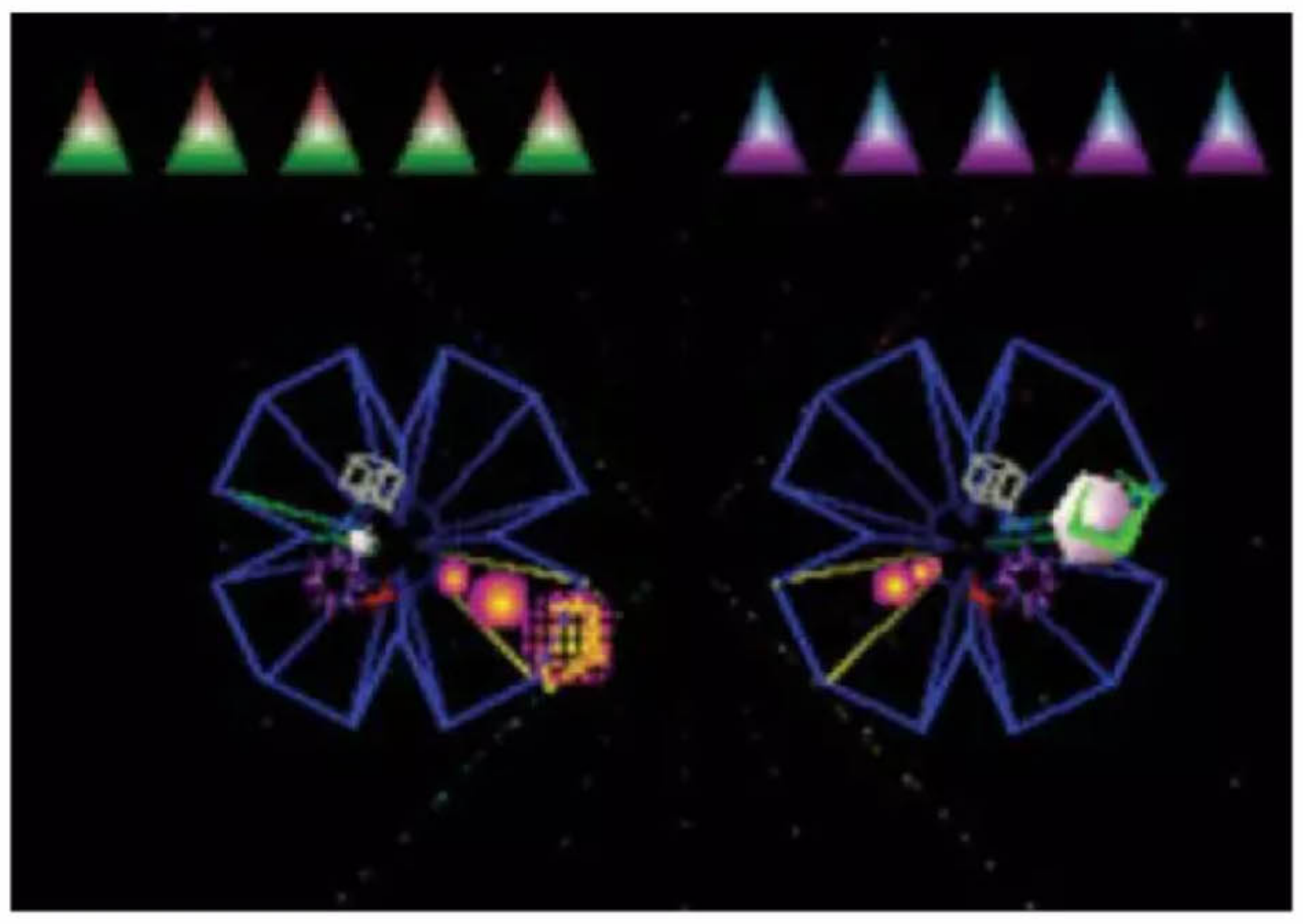
The excellent work of those audio guys at Imagitec would later be released as a standalone CD, and remains a fine testament to the contribution music can play to the gaming experience. The sensory overload *Tempest 2000* offered was spread across 100 levels – one more than the original – and a number of different game options including a traditional version and an innovative if squint-inducing Duel mode. And then there were the mellow warp sections interspersed between the madness. "I liked the juxtaposition of going from really hard action to



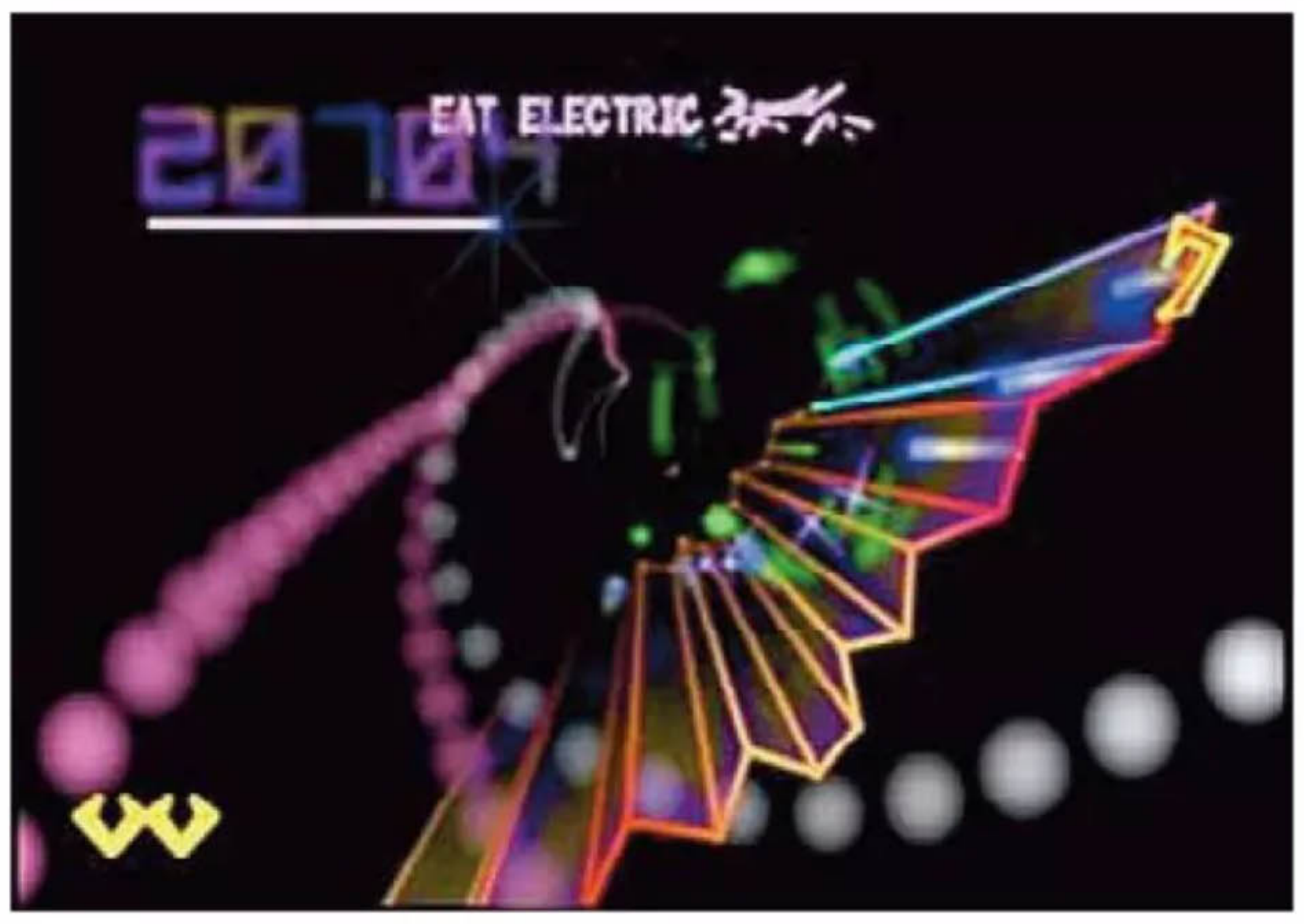
» [Jaguar] The chilled-out warp zones provided a welcome relief from the relentless blasting.



» [Jaguar] Jeff let his imagination run free when it came to web design, including some very curvaceous levels.



» [Jaguar] The two-player Duel Mode was innovative, but tracking your opponent was a challenge in itself.



» [Nuon] For all its flaws, Tempest 3000 is the best game on the Nuon console… though there are only seven others.

YOU SPIN ME ROUND

One of the joys of playing Tempest on an original arcade cabinet is the spinner that allows your ship to whip round the edge of the web at dizzying speeds. Jeff was well aware of how the Tempest 2000 experience could be improved by such a controller for the Jaguar. "As development on the game was ending, there was talk at Atari that maybe someday, someone, if not them, might make a rotary controller," he recalls. "So I made one up myself by hacking a paddle controller from the VCS and put some code in to support any rotary controller based on that design. A few years later, someone did modify a Jag controller to use it!" Search for 'Chaos Reigns' or 'T2K Commander' and you'll see for yourself…

a floaty, trancey vibe," smiles Jeff. "They were a little chill pill."

Released in 1994, *Tempest 2000* was to be the Jaguar's finest title…

"I'd put a word in for *Alien Vs Predator* and *Iron Soldier*," interrupts Jeff, modestly.

We laugh and then acknowledge that fine pair but then wonder whether, in retrospect, Jeff would have traded the honour of producing one of the best titles on the short-lived Jaguar in exchange for reaching a far wider audience for his game if he'd developed it for the PlayStation? He thinks about this question for a while before answering.

"It's satisfying to think *Tempest 2000* is perhaps one of the best games on the entire console, but I just wish the console itself had been more successful, then I would've got more royalties! I don't regret doing it on the Jag at all, though. I know on a few occasions I've backed the wrong hardware horse but I've always enjoyed myself because the thing that drives me is learning new things on new hardware, to have a prototype and be on the cutting edge of something. Even when it hasn't worked out, like with the Nuon, the coding I did on that was fantastic!"

> "I DIDN'T WANT TO SHIT ON DAVE THEURER'S ORIGINAL IDEAS BY FILLING TEMPEST 2000 FULL OF LLAMAS"
>
> **JEFF MINTER**

Ah yes, the Nuon. Six years after *Tempest 2000*, Jeff joined VM Labs to work on a bespoke DVD chip that could also play games. The company had been founded by ex-Atari employees who managed to sort out the legal shenanigans for Jeff to produce a version of *Tempest* for their forthcoming Nuon console. "It was to be a flagship title," he recalls proudly. "I said, if you get the rights, I'll give it a crack!"

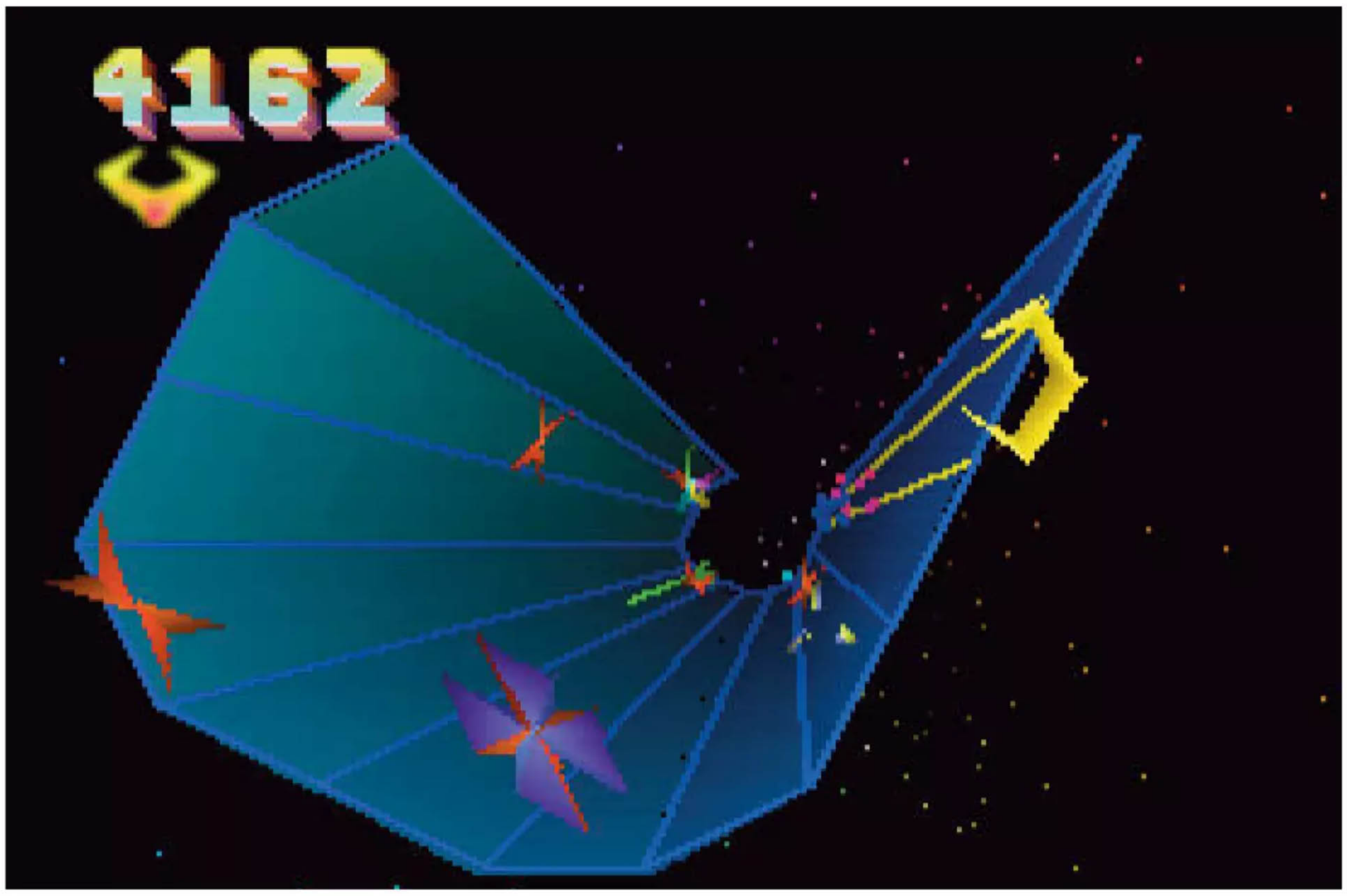
The result was *Tempest 3000*, which journeyed further down the psychedelic path first trodden by its predecessor. "I wanted it to be even more trippy and have the kinds of effects I'd been developing for a visualiser," says Jeff, as he sips another Guinness. "It was fantastically interesting hardware. I grew up as an assembler programmer and have always loved being able to have complete control of a machine. These days, you can't engage with the nitty gritty of the hardware. The Nuon was the last glorious days of that machine language coding."

We nod and smile as Jeff eulogises about the difficulties in parallel processing, real-time code overlays and how many operations you could manage per tick. "It was a very complicated dance," he grins, "but for an assembler nerd like me, fantastically satisfying."

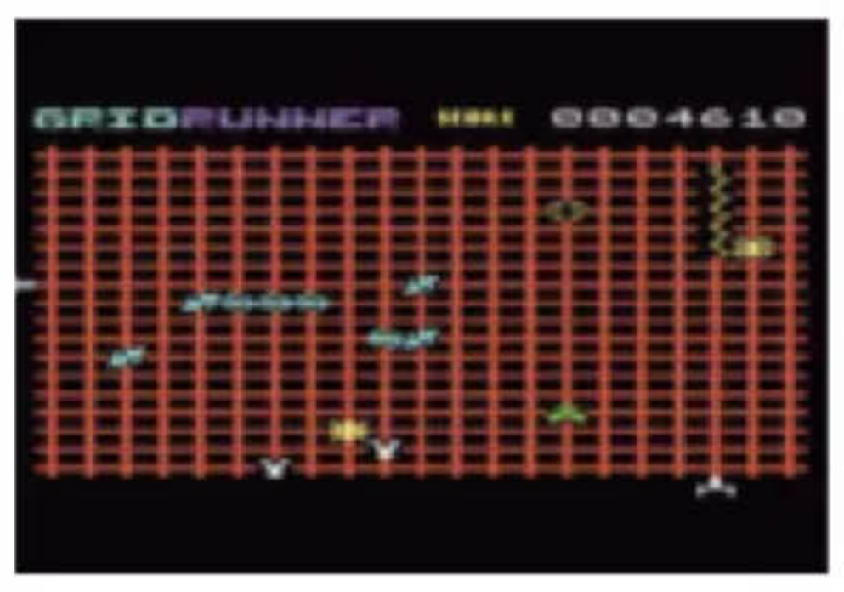
Tempest 3000 was also a pretty complicated dance for players, as they tried to skip between the myriad of foes and fiery projectiles bursting from the abyss. The blur of glowing vectors and layers of visual trickery are a joy to behold, but deciphering what's actually going on in the midst of the maelstrom can be bewildering. It was just too much for some, and we cheekily quote fellow Retro Gamer freelancer Stuart Campbell, who describes the game on his site as "over-indulgent" and "an undisciplined mess".

"The visual overload is part of the difficulty of the game," protests Jeff. "Learning to read everything through all the psychedelia is part of the challenge. When you can do that, it's quite an exhilarating feeling, being able to deconstruct an intense visual display and see the cues, because they're always there. I've had the same thing said about *Space Giraffe*. Some people seem to be actively offended if you do that, like it's not a legitimate direction to go in."

» *Dandy* integrates a level editor, enabling you to rapidly fashion your own dungeons.



UPDATING A CLASSIC



XE GAME SYSTEM

Original format:
VIC-20 (1982)

Inspired by: Centipede

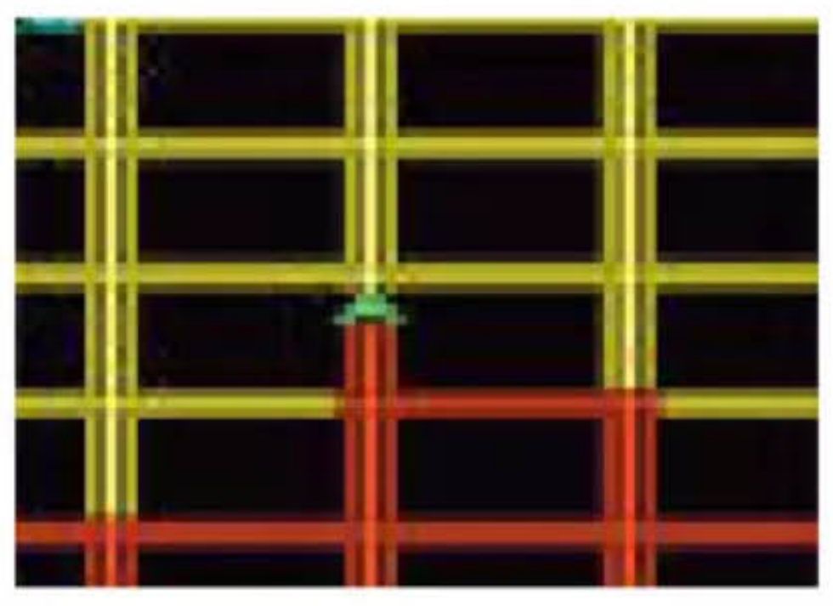
I did good here! It began as a way of avoiding copyright issues with Atari but it grew into its own thing and stands on its own merits now. The update I've done is really nice, I think.

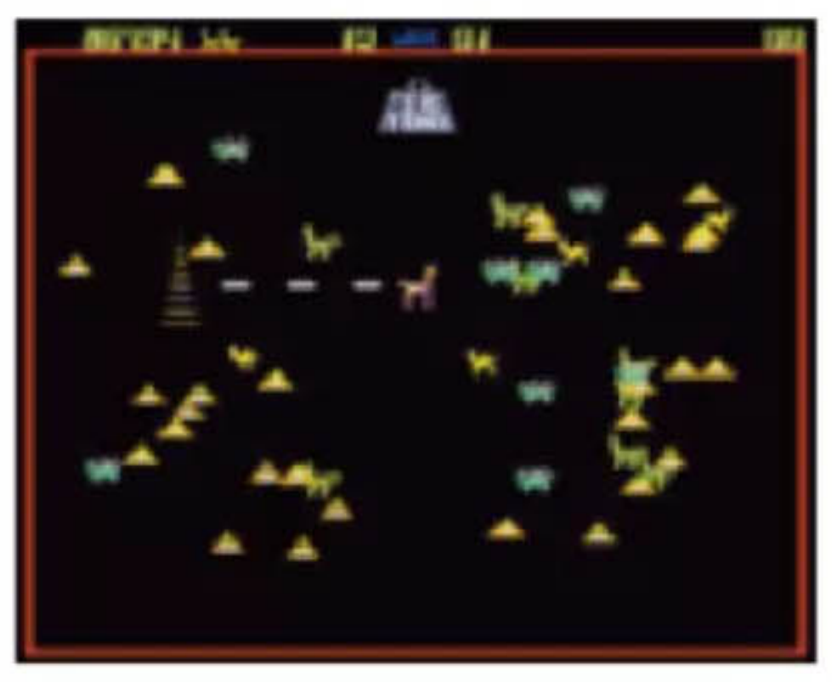
TRAXX

ORIGINAL FORMAT:
VIC-20 (1983)

INSPIRED BY: AMIDAR

I didn't do well with this. The controls are a bit crappy. It's difficult to go round corners and that should never be hard in a maze game - a fundamental flaw! I put it down to my inexperience.





LLAMATRON – ROBOTRON

ORIGINAL FORMAT:
ATARI ST (1991)

INSPIRED BY: ROBOTRON

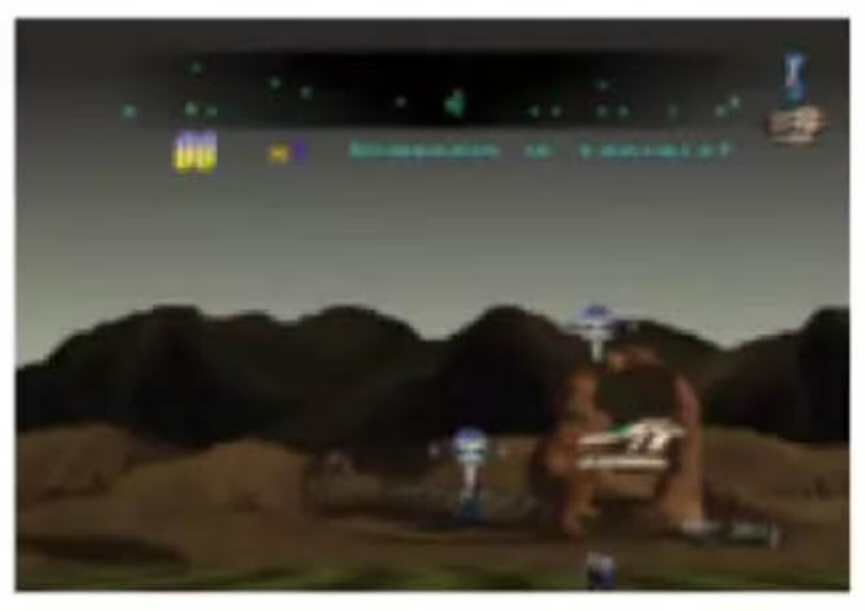
I love Llamatron. Robotron is designed to kill you fast but I wanted a game that was more of a journey. When you get good you can have a good half an hour game.

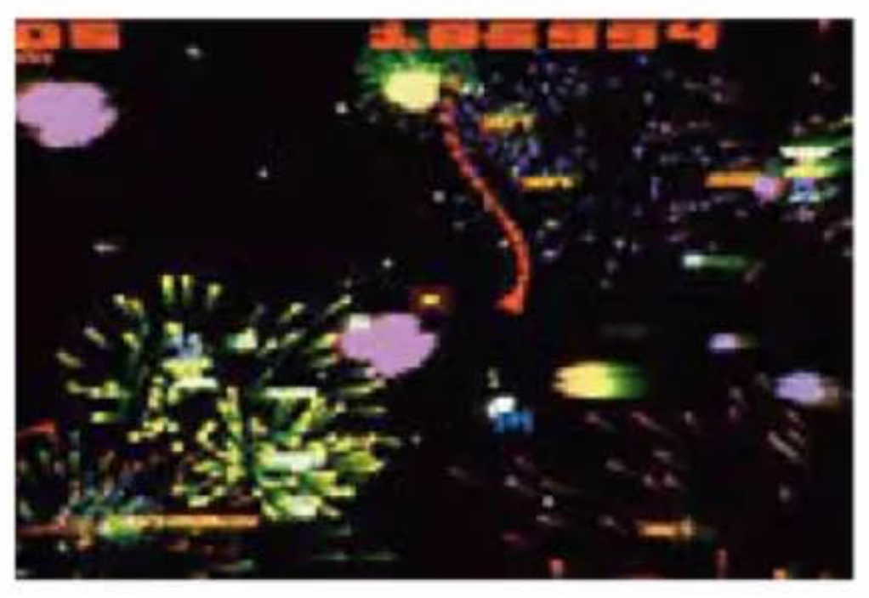
DEFENDER 2000

ORIGINAL FORMAT:
JAGUAR (1995)

INSPIRED BY: DEFENDER

I'm kind of ambivalent on this one. The psychedelic version, Defender Plus, contains the seeds of where I wanted to go but my producers at Atari pushed me in a different direction.





MINOTAUR RESCUE

ORIGINAL FORMAT:
iOS (2011)

INSPIRED BY: ASTEROIDS

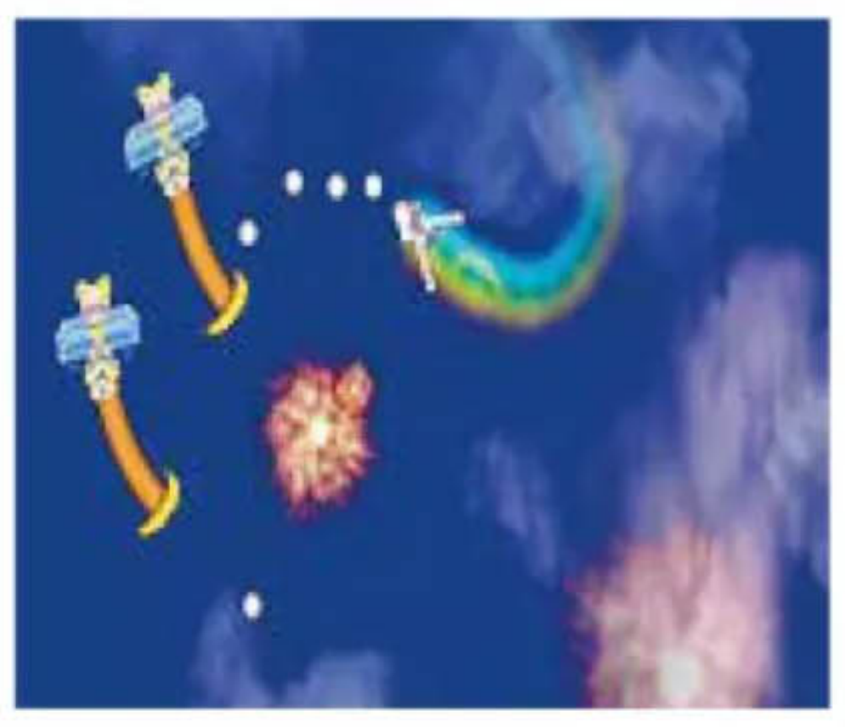
This was the start of the whole Minotaur project of making games in the style of classic titles. I tried to imagine what a game designer back then might do with the Asteroids idea.

FIVE A DAY

ORIGINAL FORMAT:
iOS (2012)

INSPIRED BY: TIME PILOT

It's like a new age version of Time Pilot with fruit. I've kept the spirit but softened it so it's nowhere near as hard. You can cruise through the early levels but that fits with the chill-out theme.



We try to calm the waters by adding that our Stu really loved *Tempest 2000*, *Tempest X3* and *Space Giraffe* but Jeff shakes his head. "Why I don't take his review too seriously is he said it was bad coding. Well, if he ever sits down to programme a VMW parallel assembler system, I'd be interested to see what he comes up with…"

Successor

Jeff does acknowledge the framerate problems with *Tempest 3000* and speaks of his frustration at the mixed reception for *Space Giraffe*, which has become something of a 'Marmite' game, even for devotees of his work. He talks about revisiting *Tempest 2000* as part of his Minotaur project for iOS devices and even hints at a scientology theme. As he finishes his pint, we conclude that Jeff's affection for *Tempest* remains undiminished.

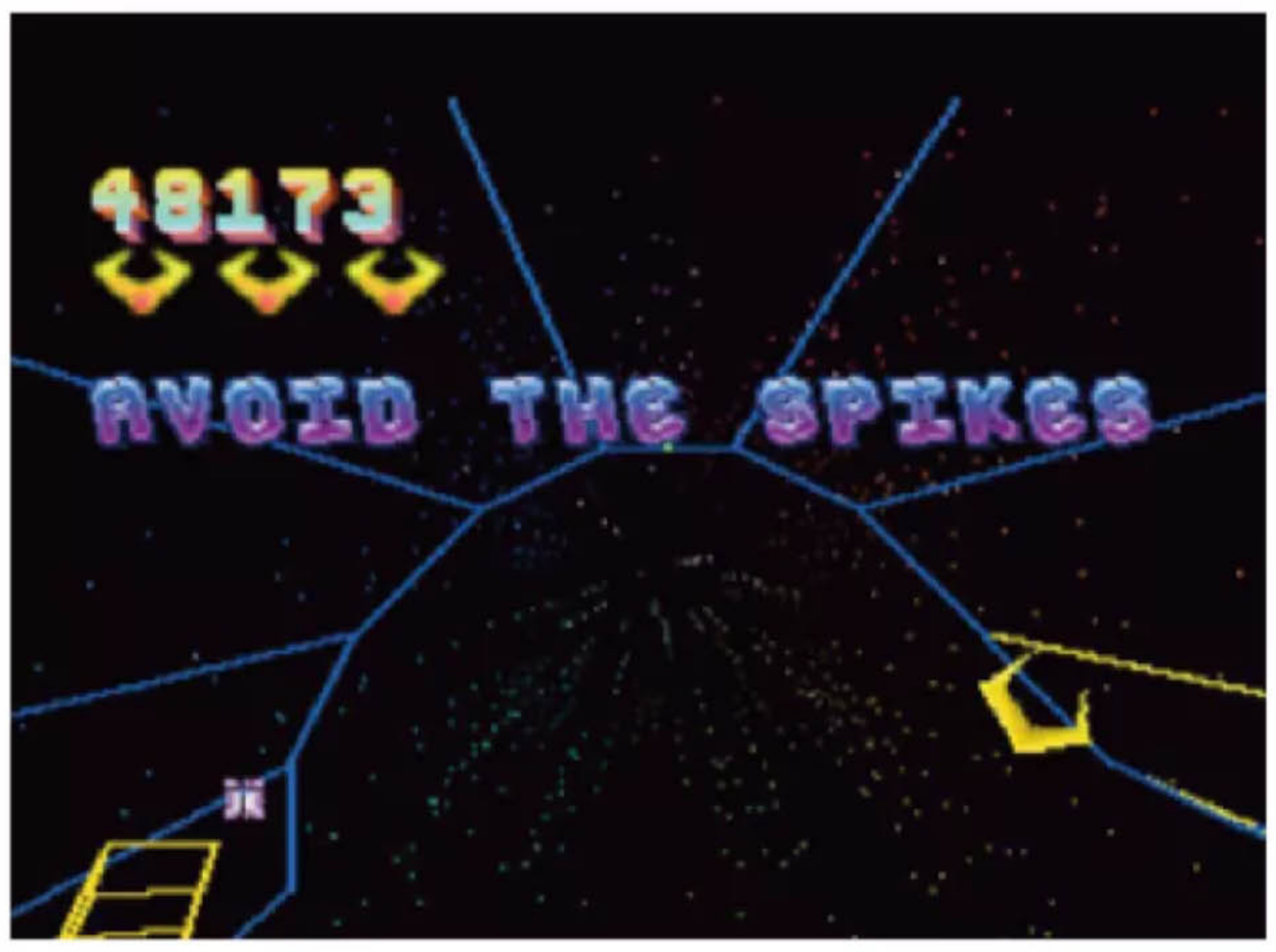
That was earlier this year. Then, just before this article was due to be sent to print, we bumped into Jeff at his Llamasoft stand at this year's Play Expo exhibition in Manchester and were delighted to see his new PlayStation Vita project. "It's an unofficial successor to *Tempest 2000*," he says of *TxK*, available to download for just a fiver. "I've always loved the abstract purity of *Tempest*. It isn't trying to emulate anything in the real world, it's just this glorious, geometric web with stuff happening on it and I love that. I felt it was time for me to do my definitive version!"

It's a fine homage to Dave Theurer's seminal blaster, the vectors looking crisp and colourful on the Vita and with a pounding soundtrack composed by volunteers from Llamasoft's 'yakyak' forum. We end by asking Jeff is he's ever met Dave or had any feedback from him on his numerous *Tempest*-inspired titles? He shakes his head, so we explain we are in touch and ask whether he would like us to pass any message on to Mr Theurer on his behalf? He muses over this for a while.

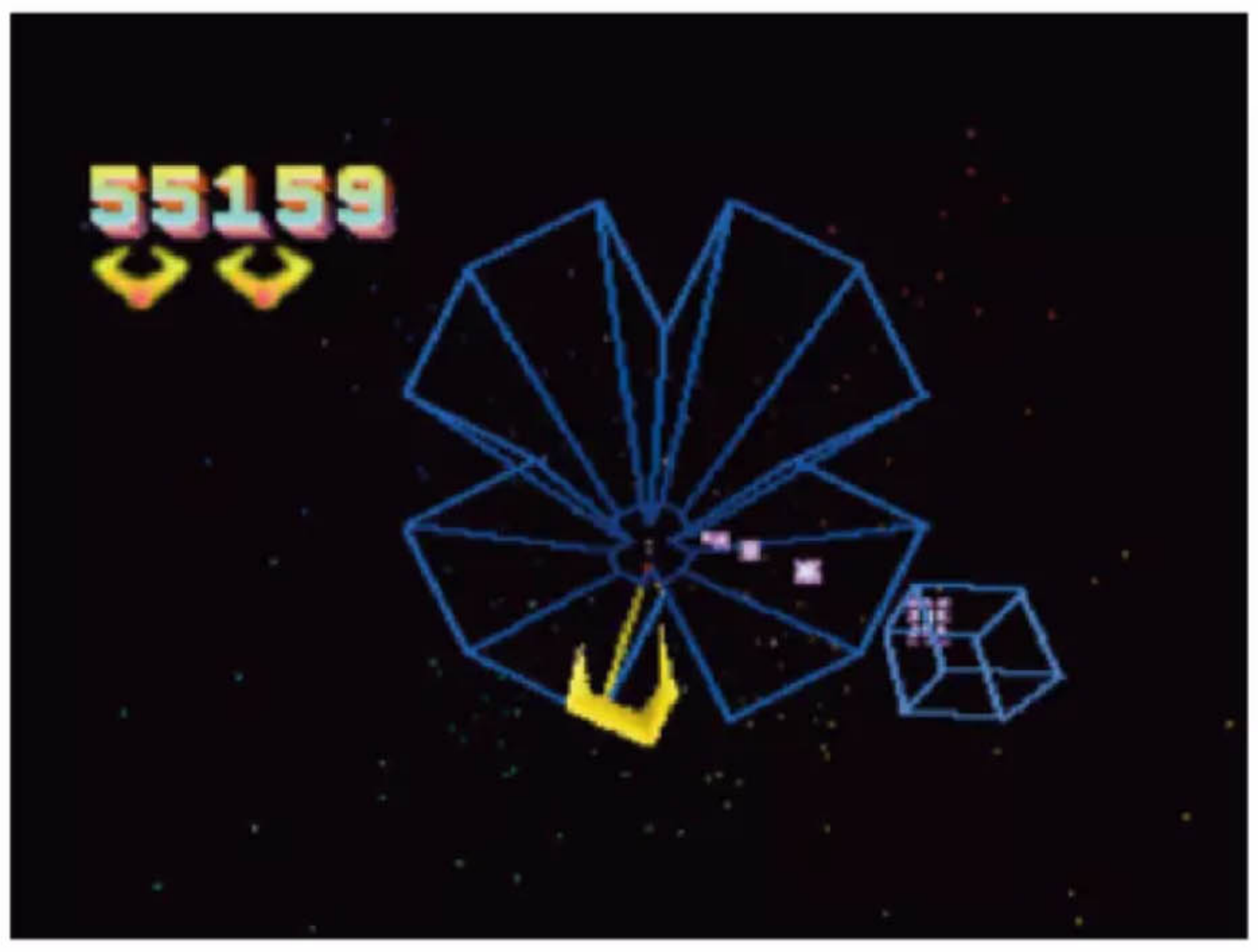
"Just ask him if he thinks I'm a c***," he finally decides, and grins.

We'd like to express many thanks to Jeff, Giles, Martyn, Kieren and Stuart.

» Jeff demonstrates *TxK* on the PS Vita at the Play Expo exhibition in Manchester earlier this year.



» [Jaguar] Almost 20 years old, *Tempest 2000* remains one of the best reasons to own a Jaguar.



» [Jaguar] Though originally created for the Jaguar, a PC version of *Tempest 2000* was released in 1996.

40 REASONS WHY WE LOVE ATARI

IT BROUGHT CARTRIDGE-BASED GAMING TO THE MASSES AND WAS INSTRUMENTAL IN ESTABLISHING THE VIDEOGAMES INDUSTRY. WITH THE ATARI BRAND CELEBRATING ITS 40TH ANNIVERSARY THIS YEAR, WE REVEAL 40 THINGS THAT MADE ATARI SYNONYMOUS WITH GAMING

AL ALCORN

Allan Alcorn is an important cog in the Atari Inc wheel, as he was directly involved in many of the company's early successes. He became its first ever design engineer and was directly responsible for the creation of *Pong*, as well as *Space Race* and *Gotcha*. He was also involved in the creation of the Atari 2600 and squeezing *Pong* onto a single chip for its home release.

THE ATARI 2600

One of the most iconic game systems ever made, the VCS/2600 wasn't the first games console, nor was it the first to take cartridges, but it was instrumental in popularising cartridge-based gaming. With the exception of dedicated *Pong* consoles, it was Atari's first proper stab at bringing the arcade experience into people's homes and also helped divide the industry into two markets: domestic and coin-op. Released in October 1977, and originally retailing for $199, the VCS was packaged with *Combat*, and after a slow start, by 1980 it became the new must-have console, thanks in no small part to its *Space Invaders* port. Before being discontinued in the early Nineties, it received a series of variations, but its most recognisable and beloved is the distinctive original six-switch woodgrain model.

ATARI COMMERCIALS

Today's videogame adverts are incredibly slick productions with feature big budgets, celebrity appearances, renowned directors and recognisable music tracks, but of course Atari Inc was there first. Some of its first commercials featured numerous celebrity appearances, from well-known sports stars to famous actors and comedians. Atari also wasn't averse to throwing money at the games it was constantly working on it if it saw that the game in question had a chance of being potentially successful. This is evidenced by its award-winning commercial for Howard Scott Warshaw's *Yars' Revenge*, a brilliant two-minute short that brought together computer graphics and live-action film, and played in movie theatres. Needless to say all publishers now do this.

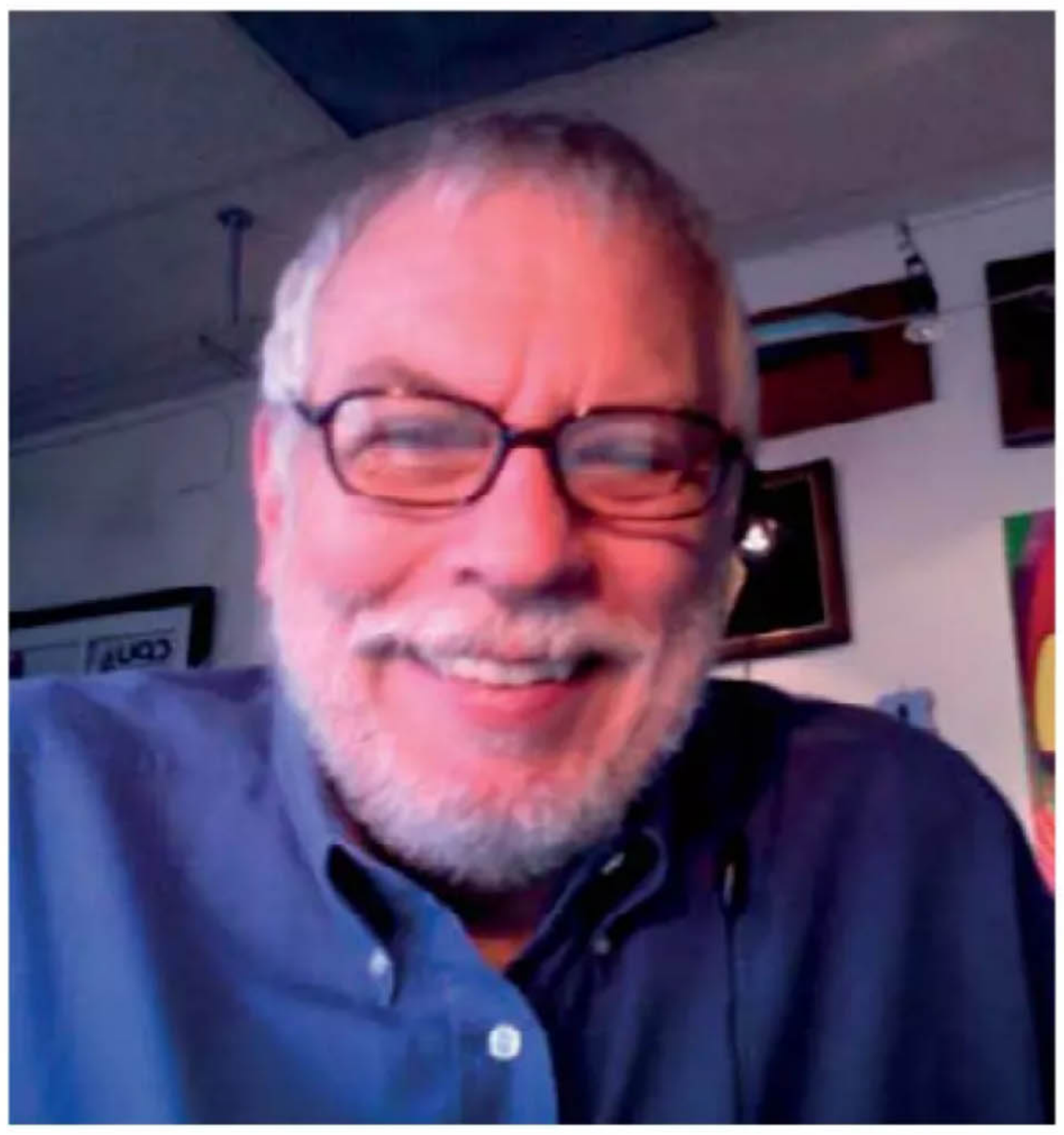
video computer system™
ATARI

SCREEN CAMEOS AND PARAPHERNALIA

Atari Inc's ownership by media giant Warner Communications meant plenty of pioneering cross-marketing. Atari's games and branding were used to sell bed sheets, children's costumes, storybooks, records, party decorations and more. Warner also leveraged another of its subsidiaries, DC Comics, for a number of comic book crossovers, including Atari's own series called *Atari Force*. Likewise, Warner's Hollywood connections were able to get Atari and its products in major movies like *Blade Runner*, *E.T.*, and *Airplane!* (pictured), as well as TV shows such as *ALF* and *The A-Team*.

NOLAN BUSHNELL

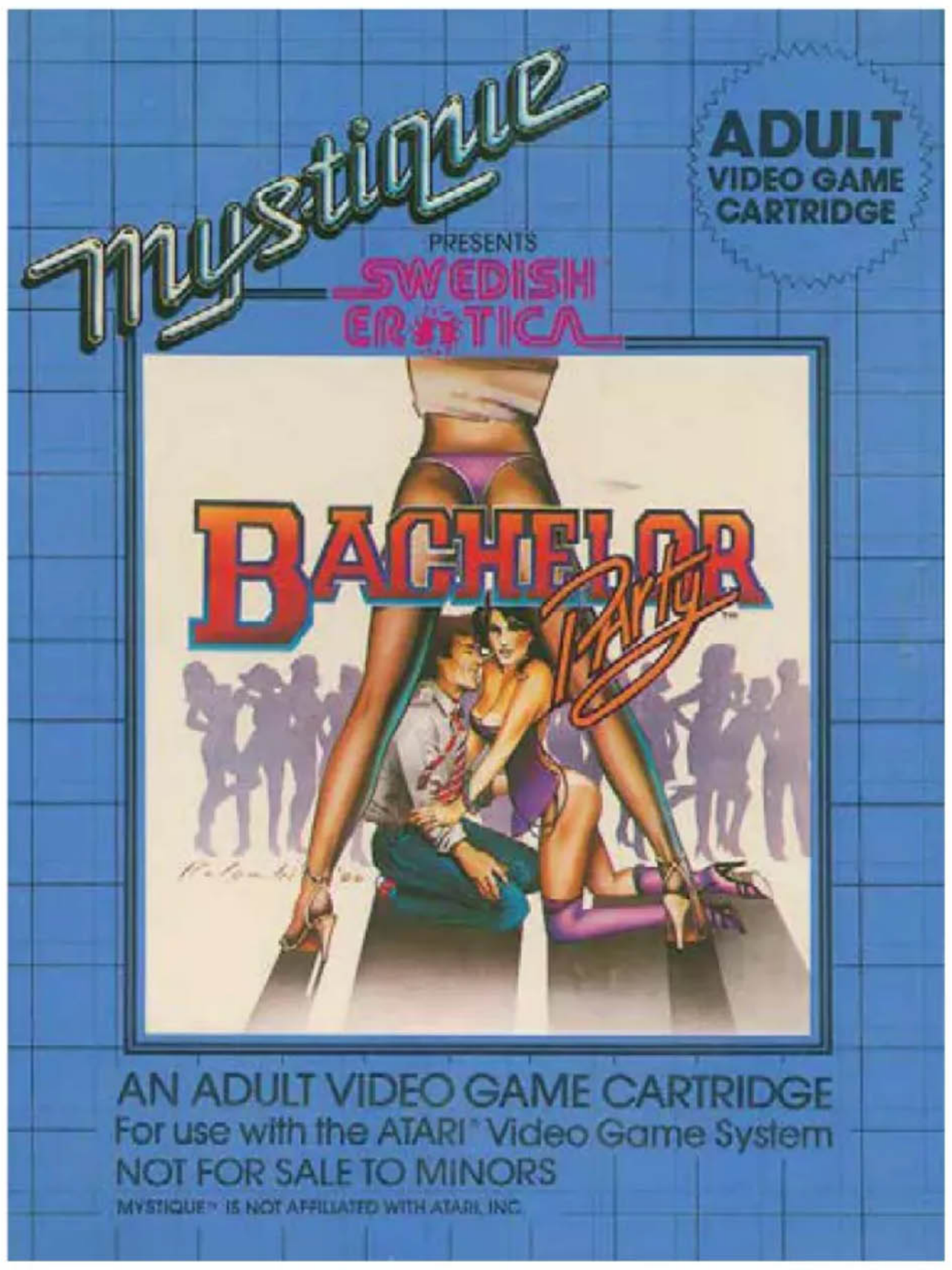
One of videogames' founding fathers, Nolan Bushnell was the engineer and brilliant entrepreneur who co-founded Atari Inc with Ted Dabney. After working with Nutting Associates to release the Spacewar!-influenced coin-op *Computer Space*, both men left to set up Atari in 1972. Following the success of Pong, Warner Communications purchased Atari Inc in 1976 and the following year helped it get the VCS to market. Following an internal struggle with Warner, Bushnell left Atari in 1978 and launched a number of successful businesses. In 2010 he made a surprise return to the brand when he joined the board of directors at Atari SA (formerly Infogrames Entertainment SA).



THAT CONTROLLER

As the complexity of games has increased, so controllers have had to evolve to keep up. Today's pads can almost be described as hand gyms, giving your extremities a complete workout across pressure-sensitive face buttons, analogue nubs, D-pads and touch pads. Back in their infancy, though, games were far simpler and virtual heroes could navigate their worlds with accessible control schemes. Though simple, the Atari 2600 controller was both functional and clever; that its design was so straightforward meant it was perfect for kids and novice gamers to grasp. Yes, it was far from perfect, and the more common CX-40 models were stiff, but it still got the job done.

> "TODAY'S PADS CAN ALMOST BE DESCRIBED AS HAND GYMS"
>
> USE A JOYSTICK


Mystique
PRESENTS
SWEDISH EROTICA
ADULT VIDEO GAME CARTRIDGE
BACHELOR Party
AN ADULT VIDEO GAME CARTRIDGE
For use with the ATARI Video Game System
NOT FOR SALE TO MINORS
MYSTIQUE IS NOT AFFILIATED WITH ATARI, INC.

RUDE 2600 GAMES

With the Atari 2600 becoming a staple fixture inside many American homes, numerous companies were keen to try to profit from the console's large install base. At the height of the machine's popularity, this caused massive game saturation in North America and a torrent of shovelware to find its way to game shelves. It also resulted in a series of terrible pornographic 2600 games by adult movie company Mystique. Clearly thinking that sex sells – even ugly digital sex – it released *Bachelor Party*, a *Breakout* clone where the paddle is a naked man and the blocks naked girls; *Beat 'Em & Eat 'Em*, which isn't a scrambled egg making simulator; and the controversial *Custer's Revenge*.

COOL PACKAGING

Hardware and videogame manufacturers spend a lot of money and time to come up with the design of their packaging in a bid to make them stand out on shop shelves, and this practice can be traced back to Atari. It was the first publisher to really use packaging to create a strong brand identity through its bright, colourful VCS boxes. Using clear text, attention-grabbing cover hits and the title of the game printed across the spine, they shared much in common with magazine covers. Atarisoft boxes for other formats were also colour-coded, and this again became a staple – exampled by the orange, red and yellow flashes used to signify CPC, C64 and Spectrum games respectively in the UK, and the graph paper borders used on the box covers of Mega Drive and Master System games.

AIR·SEA BATTLE
VIDEO COMPUTER SYSTEM
GAME PROGRAM
27 VIDEO GAMES
ANTI-AIRCRAFT · TORPEDO · POLARIS · SHOOTING GALLERY · BOMBER · POLARIS VS BOMBER
ATARI
CX 2602

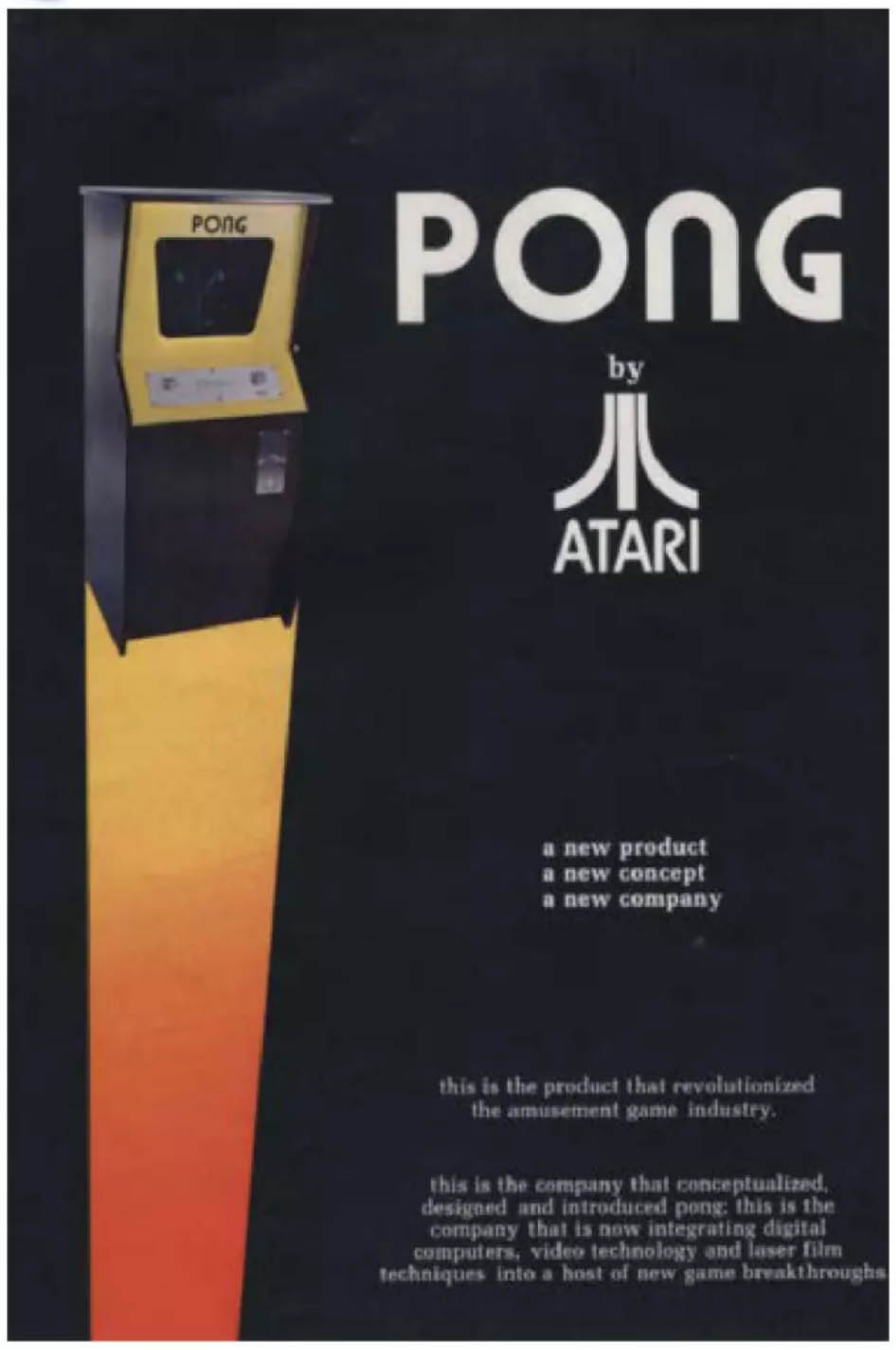
ATARI LYNX

We've said it time and time again, but the Atari Lynx, despite being large, expensive and a battery-sucking monster, is a fantastic portable home to a wealth of impressive arcade conversions, and some enjoyable exclusive titles too. Developed with Epyx Games, it was the first portable to feature a colour display and an integrated backlight. Suffering from a lack of third-party support, though, and sharing a release year with the far cheaper and more pocket-friendly Game Boy meant the Lynx sadly bombed and was eventually forsaken by Atari Corporation after an unsuccessful 1990 relaunch with the redesigned Lynx II. This in itself is a real shame as it has a staggering number of amazing arcade ports, ranging from *Roadblasters* to *S.T.U.N. Runner*, which proved just how good the handheld could be when placed in capable hands.

RAY KASSAR

Kassar reigned from 1978 to 1983, first as president and later as CEO, shifting the company away from game development to focus on sales of Atari products. Although Kassar was responsible for Atari's sales growth from $75 million to $2.2 billion in three short years, he's now infamous for his resignation over allegations of insider trading and the indirect forming of rival Activision. When David Crane, Larry Kaplan, Bob Whitehead and Alan Miller asked for commission on their games, Kassar said: "You are no more important to that game than the guy on the assembly line who puts it together." The group left to start Activision, the first third-party publisher.

> "THE ATARI LYNX IS A FANTASTIC PORTABLE HOME TO A WEALTH OF IMPRESSIVE ARCADE CONVERSIONS AND GREAT EXCLUSIVES"
>
> YOU REALLY NEED A LYNX

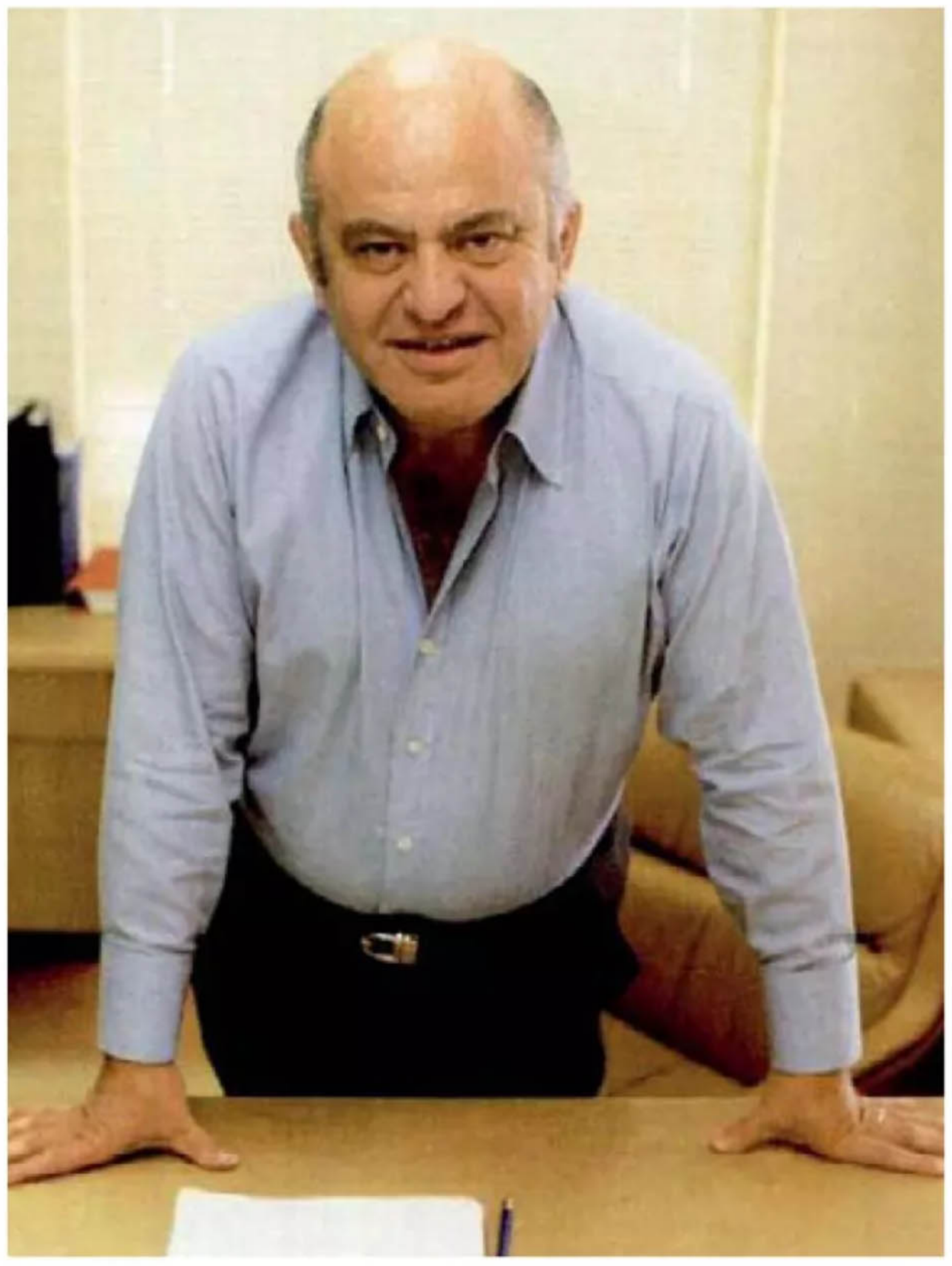

PONG
PONG
by
ATARI
a new product
a new concept
a new company
this is the product that revolutionized the amusement game industry.
this is the company that conceptualized, designed and introduced pong; this is the company that is now integrating digital computers, video technology and laser film techniques into a host of new game breakthroughs

PONG

The first game Atari Inc ever released, *Pong* started life as a simple training exercise that Bushnell assigned to the company's first ever design engineer, Allan Alcorn. The brief was to create a game with two paddles, a moving spot and a scoreboard, and, working to this remit, unsurprisingly, Alcorn developed a version of electronic tennis. After a series of tweaks, adding sound effects and realistic return physics, the first prototype of *Pong* was installed in Andy Capp's Tavern in California. Within days of being installed, the prototype began developing technical issues, and closer inspection revealed that the issue stemmed from an overfeeding of quarters. Realising straight away the potential, Atari decided to manufacture and ship the machines itself.

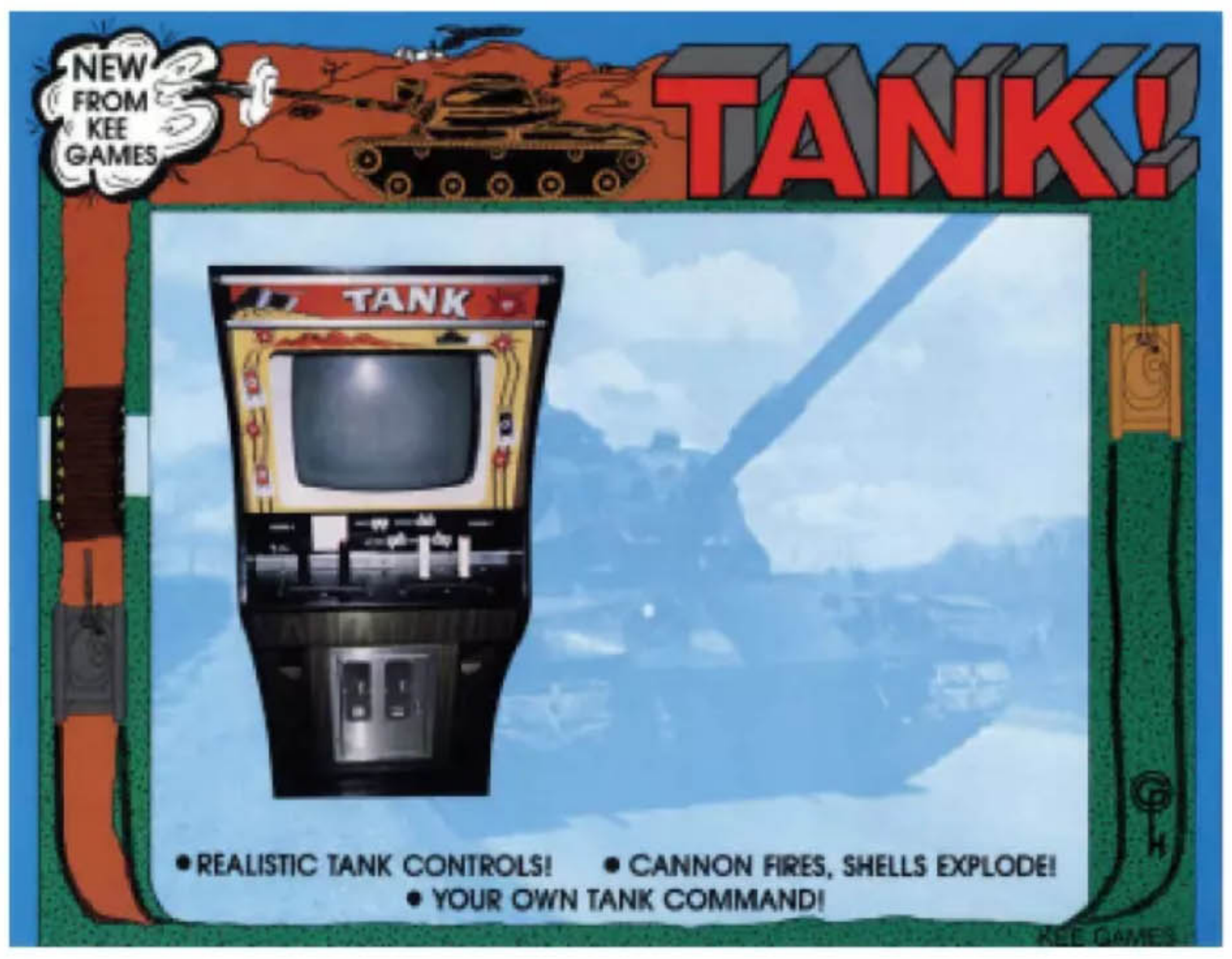
JACK TRAMIEL

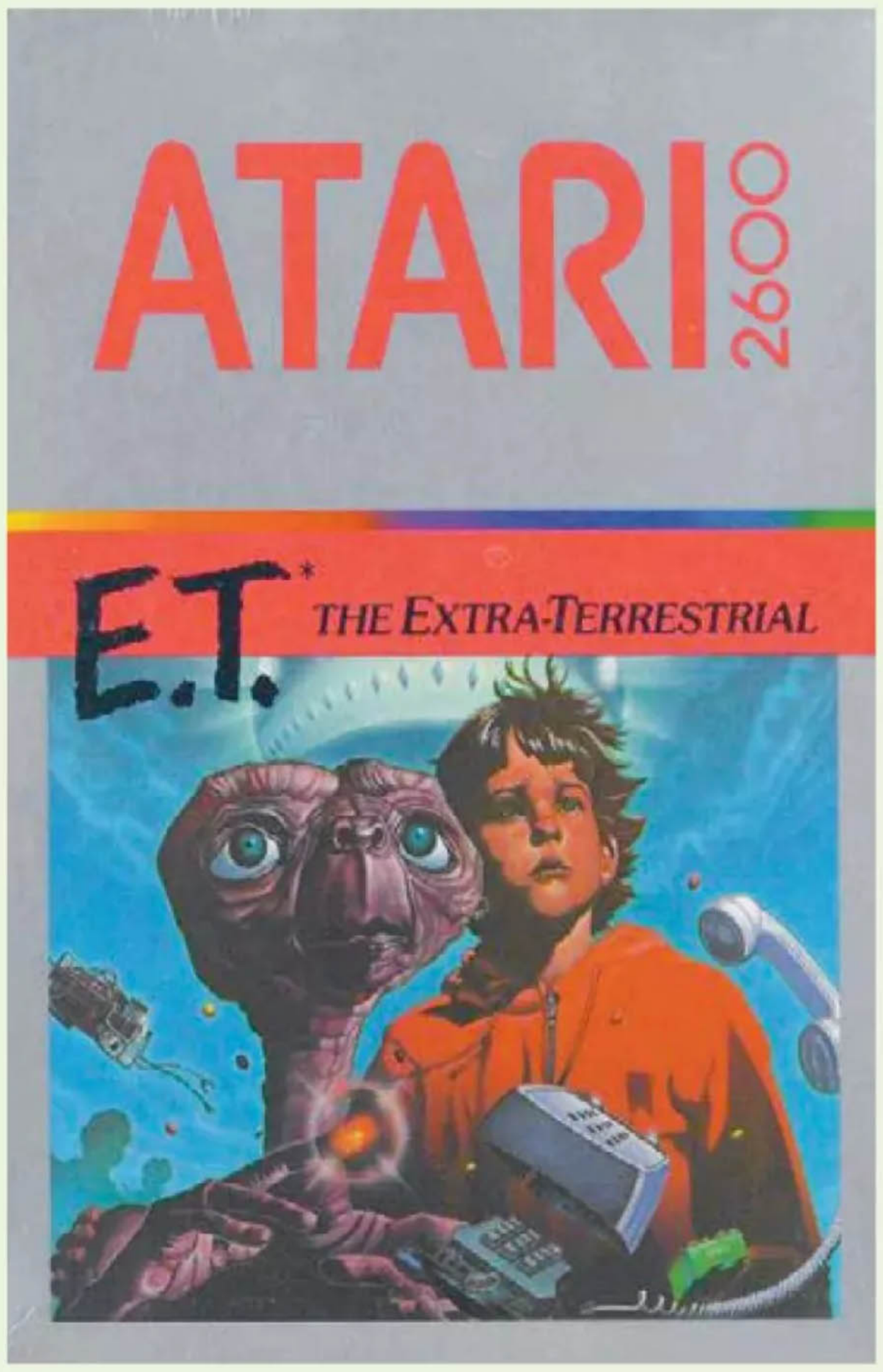
Following the collapse of Atari Inc, in 1984 the company was divided into two parts. While Warner Communications retained the arcade division, which was renamed Atari Games, what remained of its computer and console division was purchased by business entrepreneur Jack Tramiel, the Commodore International founder who brought the Commodore PET, VIC-20 and Commodore 64 to market. It was folded into his Tramel Technology Ltd, which was renamed Atari Corporation. It marked the second incarnation of Atari, though now the brand was split between two owners.



FORMING KEE GAMES

Though initially thought to be a competitor of Atari Inc, Kee Games was actually a subsidiary. Headed by Joe Keenan, Bushnell's next-door neighbour, the company was set up as a way for Atari to circumvent the exclusivity terms laid down by arcade distributors. By Kee releasing a number of Atari game clones, Atari could profit from deals with multiple distributors. When this canny business manoeuvre was discovered in 1974 and Kee started doing its own popular games like Tank, Kee Games was folded into Atari and Keenan was promoted to president.

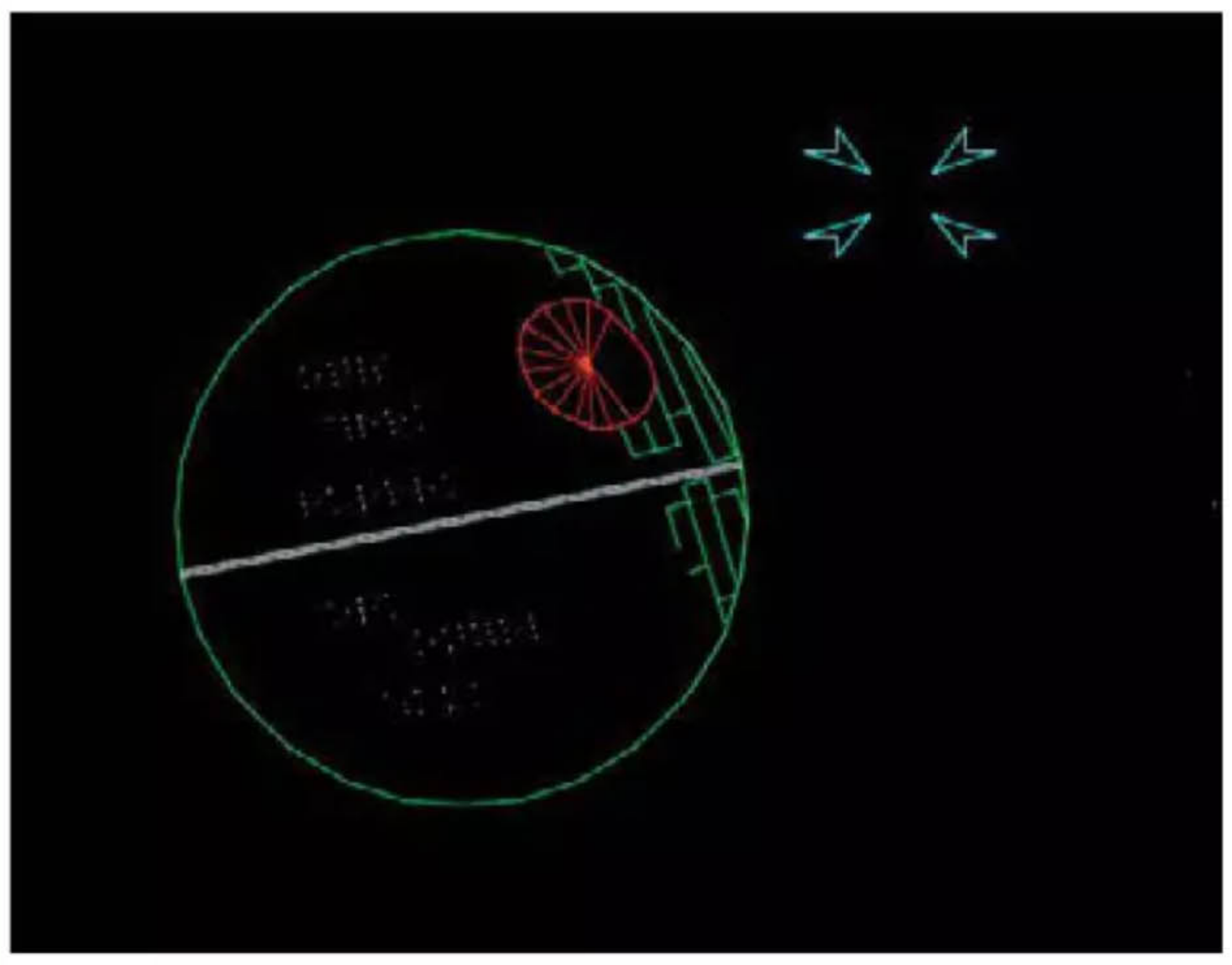

NEW FROM KEE GAMES
TANK!
TANK
• REALISTIC TANK CONTROLS!
• CANNON FIRES, SHELLS EXPLODE!
• YOUR OWN TANK COMMAND!
KEE GAMES



E.T.
©1982 ATARI

E.T.: THE EXTRA-TERRESTRIAL

Atari is a company as famous for its failures and missteps as its wins and successes. When thinking of a list of commercial videogame super flops, one title always springs to people's minds. Based on the popular Steven Spielberg movie, *E.T.* was a rushed production, reputedly developed in just five weeks. Trying to lure Spielberg away from Universal, Warner Communications' head, Steve Ross, brokered his own deal with the director to secure the licence for a considerable sum of money. The deal, in which one condition was that it would be ready for the festive season, was forced on Atari Inc. Knowing it would have to sell a lot of copies, it signed off on an order for some 5 million cartridges. However, the game went on to sell just over a fifth of that number, and of those that did sell, a large number were promptly returned to Atari with complaints that the game wasn't enjoyable. With Atari left to stomach the loss and embarrassment, its reputation was tarnished and its profits never recovered.



STAR WARS ARCADE GAMES

Being such a dominant force in the videogame arena enabled Atari Inc to secure many movie licences, and by far the most lucrative was *Star Wars*. Atari released two similar vector shooters based on *A New Hope* and *The Empire Strikes Back*, and a horizontal raster shooter based on *Return Of The Jedi*. *Star Wars* was released in 1983 and allowed players to re-enact the Death Star assault from the movie's finale. Widely regarded as one of the best vector games ever, it featured digitised speech and music from the movie, colourful vector graphics and, thanks to that lavish sit-down cab, immersive gameplay.

THE ATARI JAGUAR

Following its abandonment of the Lynx, Atari Corp tried once again to regain a foothold in the home videogame console market. It set about achieving this task with a powerful new console to blow the competition out of the water. Designed by the very same minds behind the never-released Konix Multisystem, and released in November 1993, the Atari Jaguar was the first 64-bit games machine. Despite its impressive technical specs and an ambitious virtual reality headset peripheral, though, the Jaguar was a commercial flop for Atari, ultimately hurt by a lack of decent exclusive software and the looming threat of upcoming hardware from Sega and Sony. Despite its failings, today the Jaguar enjoys a relatively fruitful homebrew scene and has garnered a loyal fan base.

EATING PIZZA AT CHUCK E CHEESE'S

Nolan Bushnell was a huge fan of amusement parks and The Walt Disney Company. In fact, after graduating from university, Bushnell sought employment at Disney but was unsuccessful. To finally scratch that itch, in 1977, while still working at Atari, he decided to set up Chuck E Cheese's Pizza Time Theatre, a pizza restaurant chain fitted with various theme park-style attractions, including arcade and redemption ticket machines, rides, and animatronics shows, all aimed at children as well as cleverly operating as a distribution outlet for Atari games.

When Bushnell left Atari in 1978, he purchased the business from Warner Communications and grew it through the restaurant franchise model. However, the speed at which the videogame industry was evolving put a considerable strain on the business, and in 1983 the company filed for bankruptcy. Its assets were then purchased by rival pizzeria chain Showbiz Pizza Place. The chain still operates today, now under the new name of *Chuck E Cheese's*.

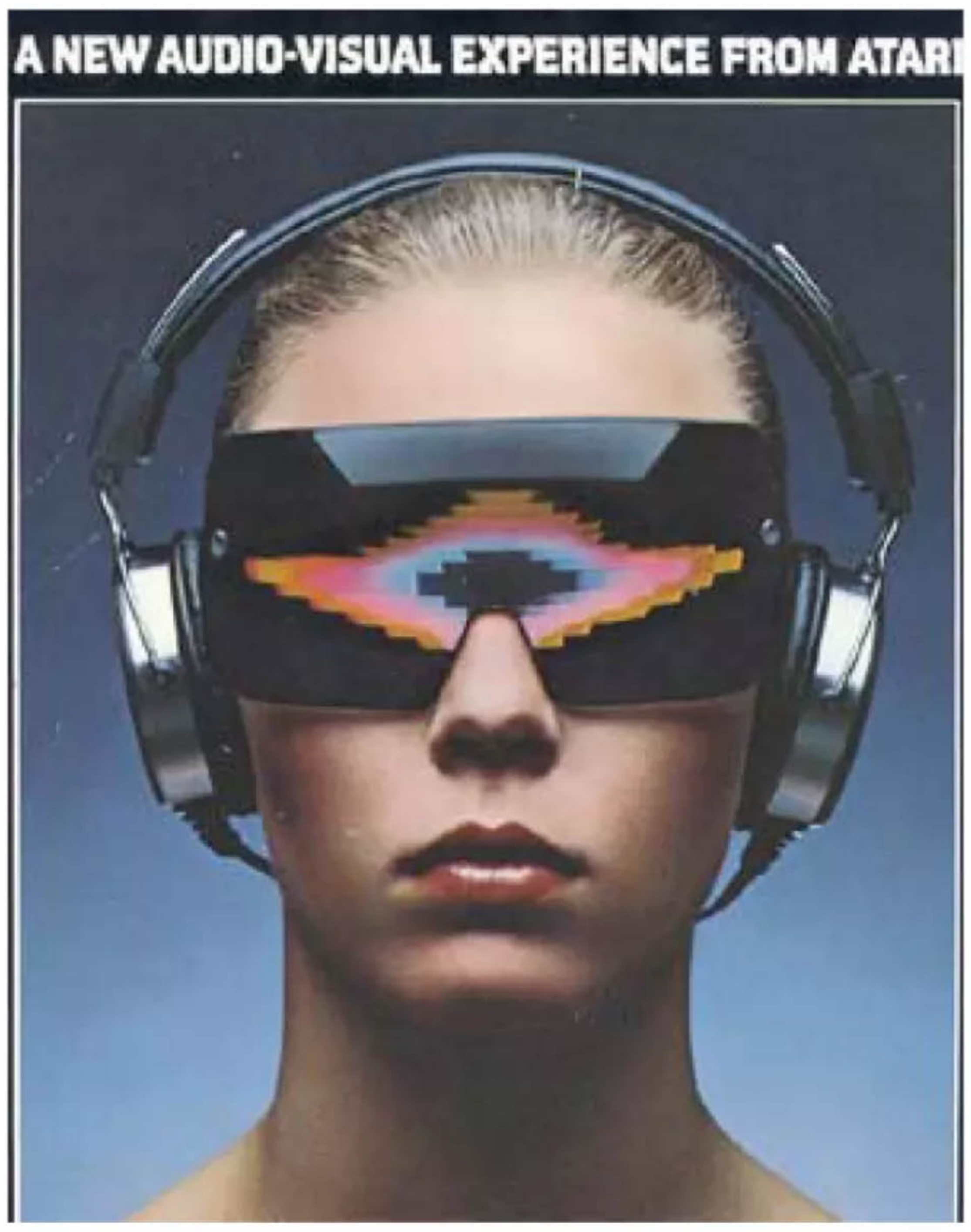
TED DABNEY

Virtually everyone associates Atari with Nolan Bushnell, but that tells only half the story. Atari Inc was actually co-founded by Bushnell and partner Ted Dabney, who had first set up Syzygy Engineering together. While Bushnell became the face and mouthpiece of Atari, Dabney stayed in the shadows and has only recently begun to recount his memories of the fast-changing period.

> "DESPITE ITS IMPRESSIVE TECHNCIAL SPECS, THE JAGUAR WAS A COMMERCIAL FLOP FOR ATARI"

DOOM
JAGUAR
ATARI
64-BIT INTERACTIVE MULTIMEDIA SYSTEM

ATARI'S LAST CONSOLE BOWS OUT

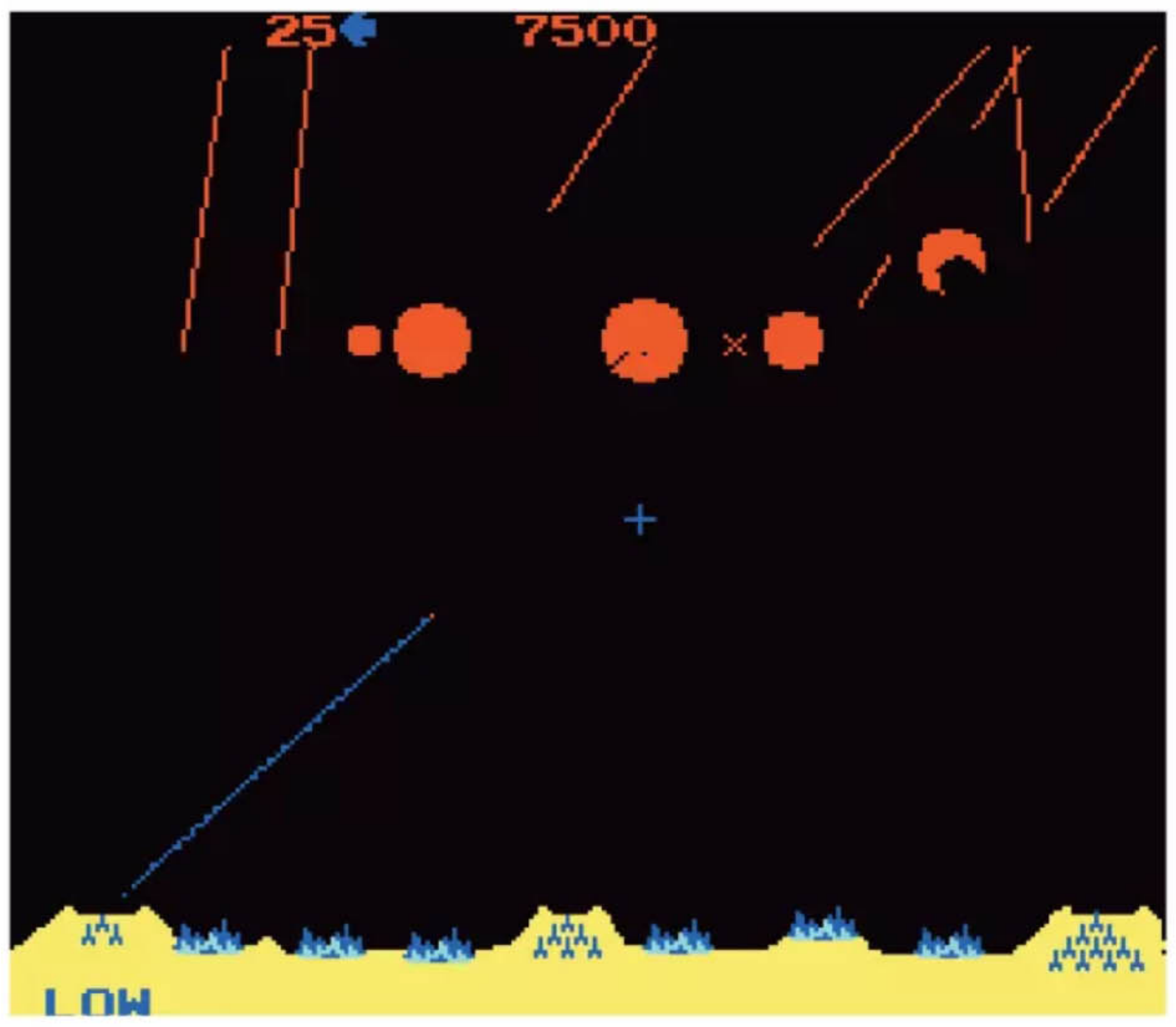

A NEW AUDIO-VISUAL EXPERIENCE FROM ATARI

ATARI VIDEO MUSIC

Thankfully not an embarrassing promotional music video starring the So Solid Atari Crew, but an audio visualisation unit released by Atari in 1975. The brainchild of Bob Brown, inventor of *Home Pong*, *Atari Video Music* could be hooked up to a stereo and television, and by adjusting a single colour and two contour dials, it was possible to create trippy images on your telly to impress your friends when you hosted cocktail parties. Coincidently, many years down the line Jeff Minter created a similar concept with the *Virtual Light Machine* program for the Jaguar CD, which came integrated into its hardware.

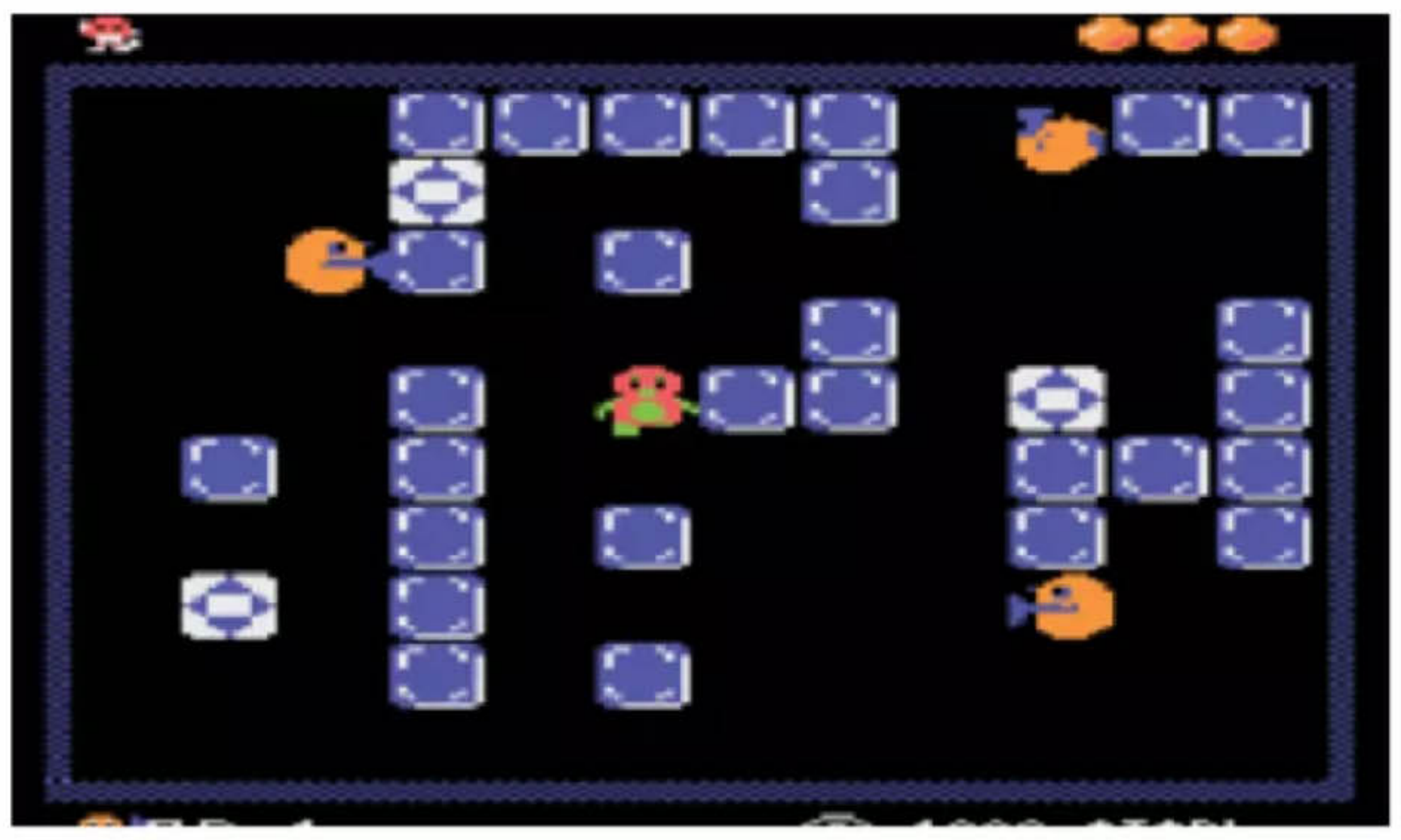
DEMAKES

Like most retro consoles, the 2600 enjoys a healthy homebrew scene, made up of passionate programmers looking to continually eke more from the console's clever custom computer chip. More recently, though, the machine has become a popular platform for demakes, the art of re-creating current games on older platforms. You can play 2600 versions of *Portal* (*Super 3D Portal 6*), *Mega Man* and even *Halo* (*Halo 2600*) on the machine.



MISSILE COMMAND

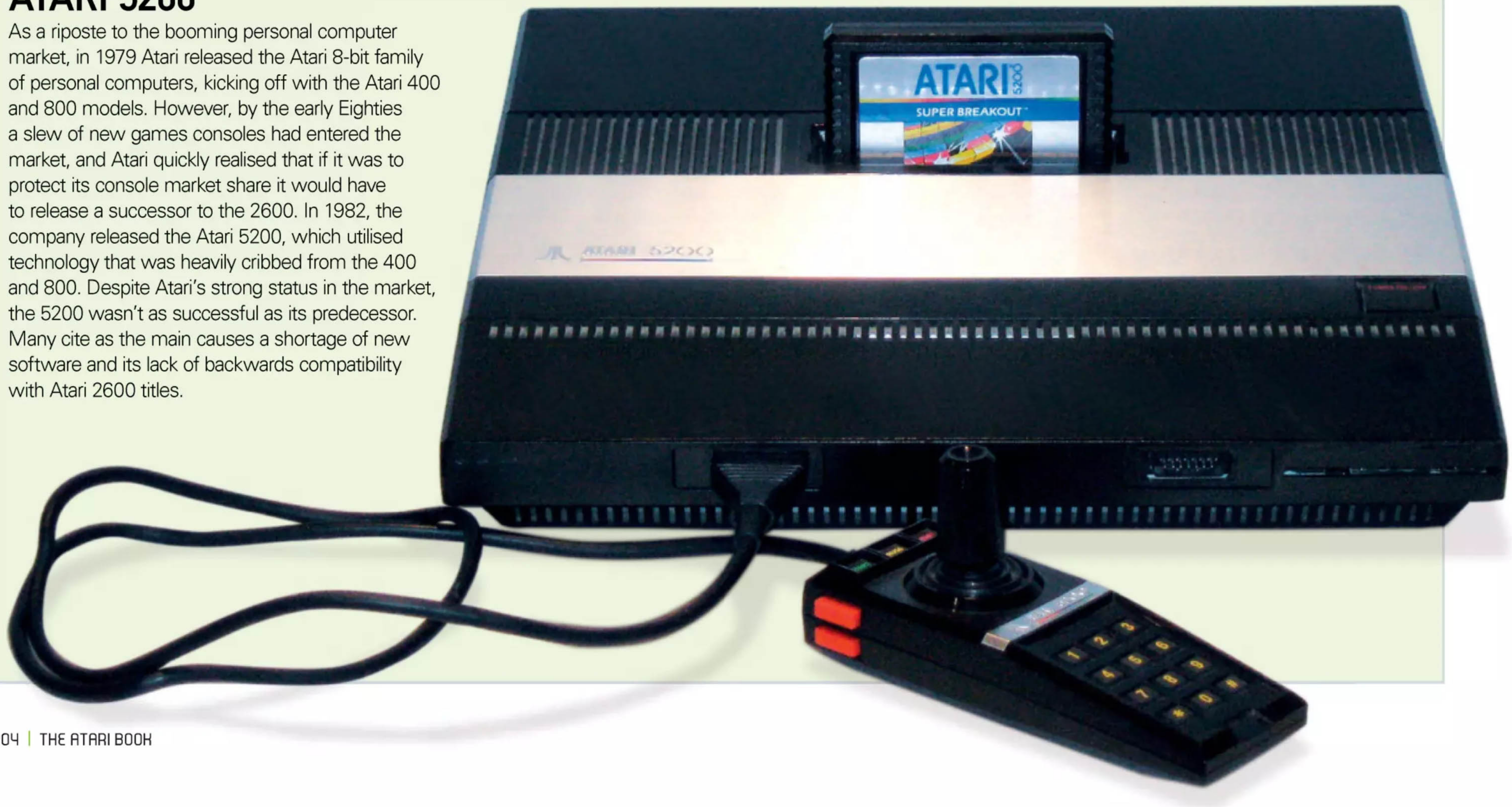
A Cold War nightmare led Dave Theurer to create *Missile Command* – a frantic and challenging trackball-controlled shooter that tasked players with protecting cities from ballistic missiles. One of the bleakest coin-ops of the age, the following year gamers were flocking to play the more lighthearted likes of *Pac-Man*, *Donkey Kong* and *Frogger*. *Missile Command* has become synonymous with the Atari brand and had its popularity raised with an impressive conversions for the 2600.



> "ONE OF THE BLEAKEST COIN-OPS OF THE AGE"
>
> THE IMPACT OF MISSILE COMMAND

ATARI 5200

As a riposte to the booming personal computer market, in 1979 Atari released the Atari 8-bit family of personal computers, kicking off with the Atari 400 and 800 models. However, by the early Eighties a slew of new games consoles had entered the market, and Atari quickly realised that if it was to protect its console market share it would have to release a successor to the 2600. In 1982, the company released the Atari 5200, which utilised technology that was heavily cribbed from the 400 and 800. Despite Atari's strong status in the market, the 5200 wasn't as successful as its predecessor. Many cite as the main causes a shortage of new software and its lack of backwards compatibility with Atari 2600 titles.

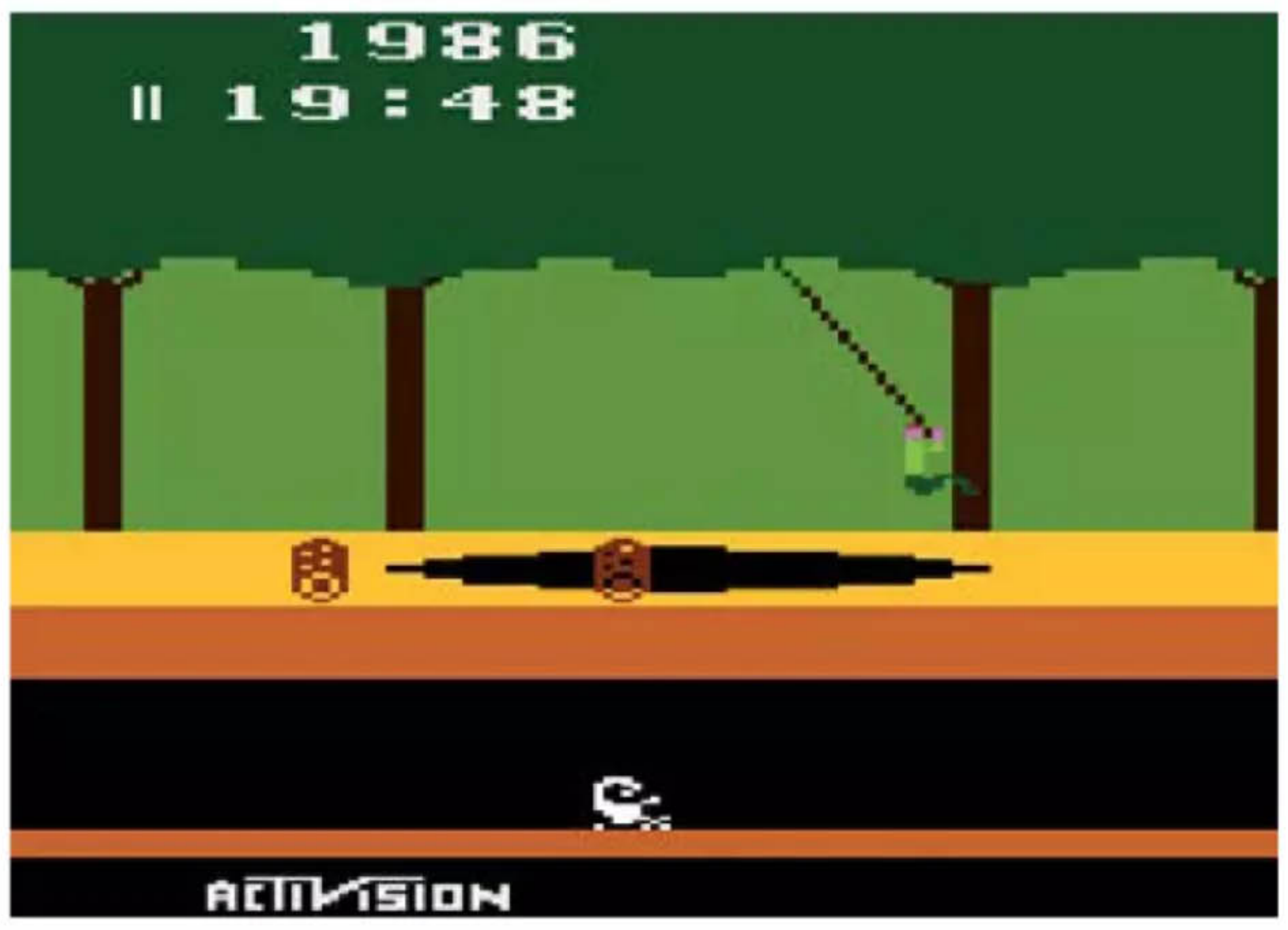


JAY MINER

Before the talented graphic chip designer became the founding father of the Amiga Corporation, Jay Miner was responsible for leading the design team of the television interface adaptor (TIA), the clever computer chip inside the VCS that was responsible for everything from its graphics, animation and colours to sound and controller registers. At the time when the VCS was in development, RAM was expensive and the TIA's clever design, which forced programmers to write their own OS each time, offering amazing flexibility and allowing Atari to keep the cost of the machine affordable for consumers. Miner later developed the concept with display lists for Atari's 8-bit computers, and later still with the Amiga.

PITFALL HARRY

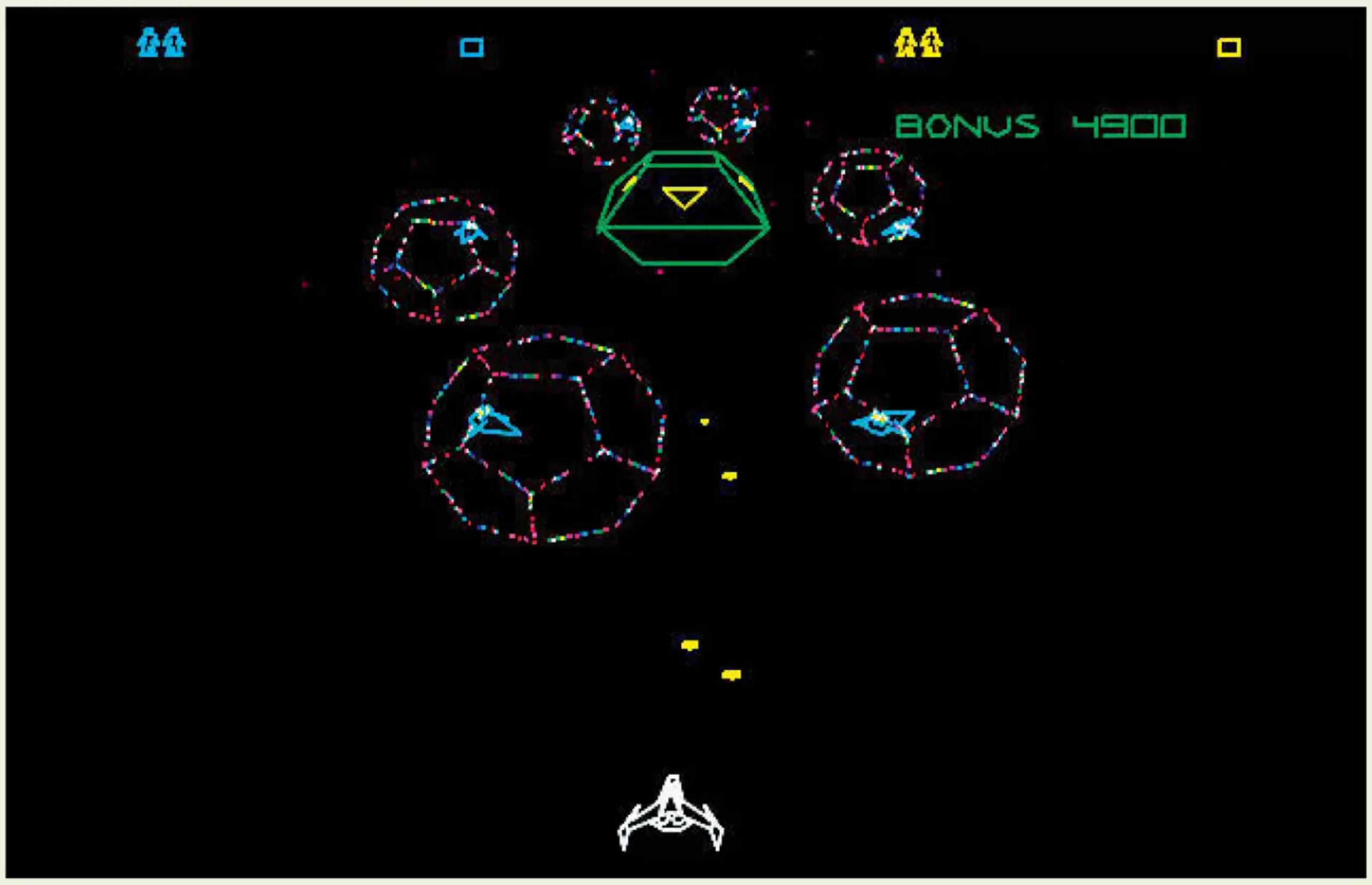
Though he wasn't a creation of Atari, David Crane's Pitfall Harry was the closest thing the Atari 2600 ever had to a mascot. Selling over 4 million copies, *Pitfall!* is the bestselling third-party 2600 game, and spawned a popular platforming franchise that this year celebrates its 30th anniversary.

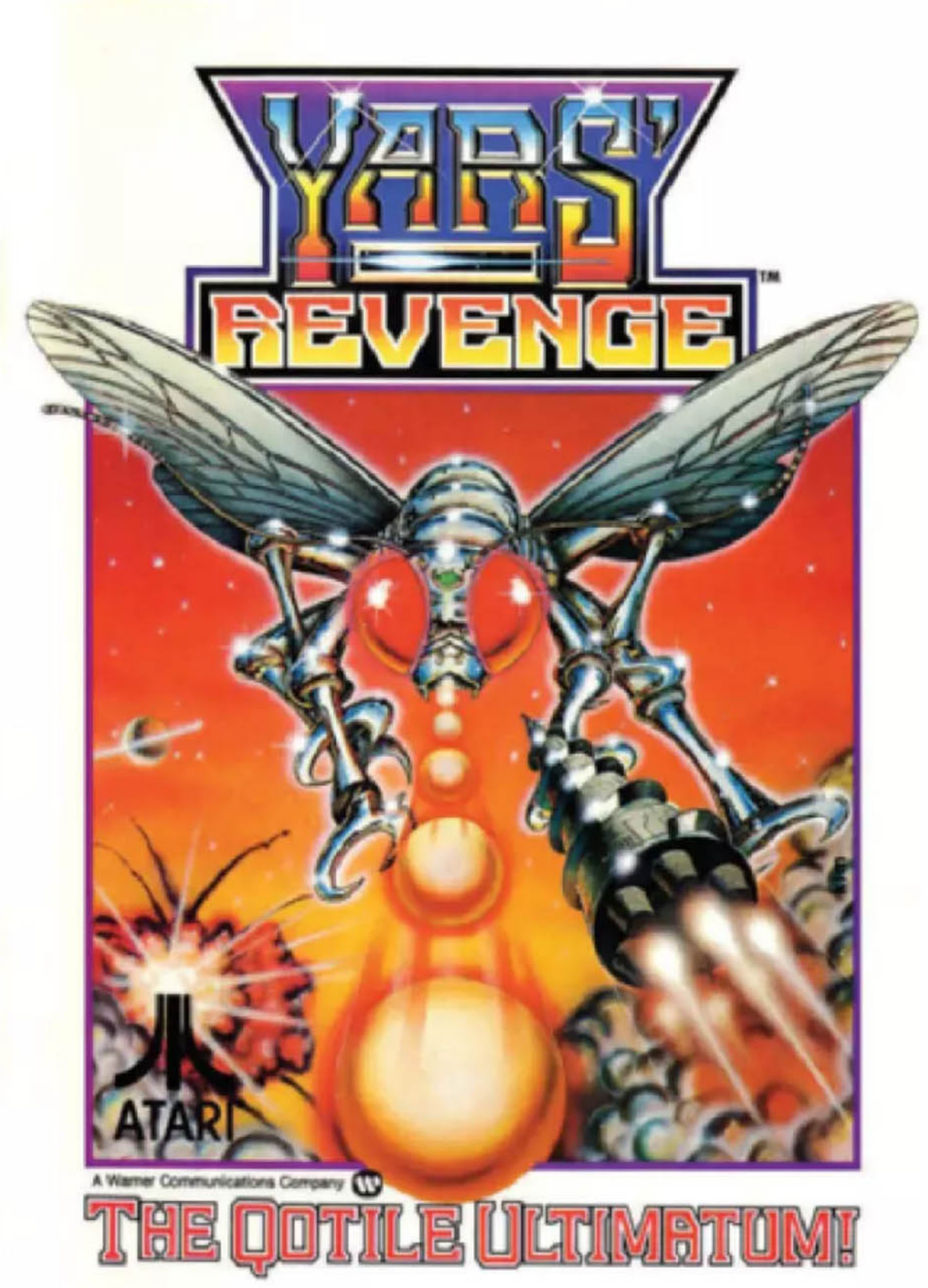


> "PITFALL! IS THE BESTSELLING THIRD-PARTY 2600 GAME, AND SPAWNED A POPULAR PLATFORMING FRANCHISE"
>
> DAVID CRANE DOES GOOD

VECTOR GRAPHICS

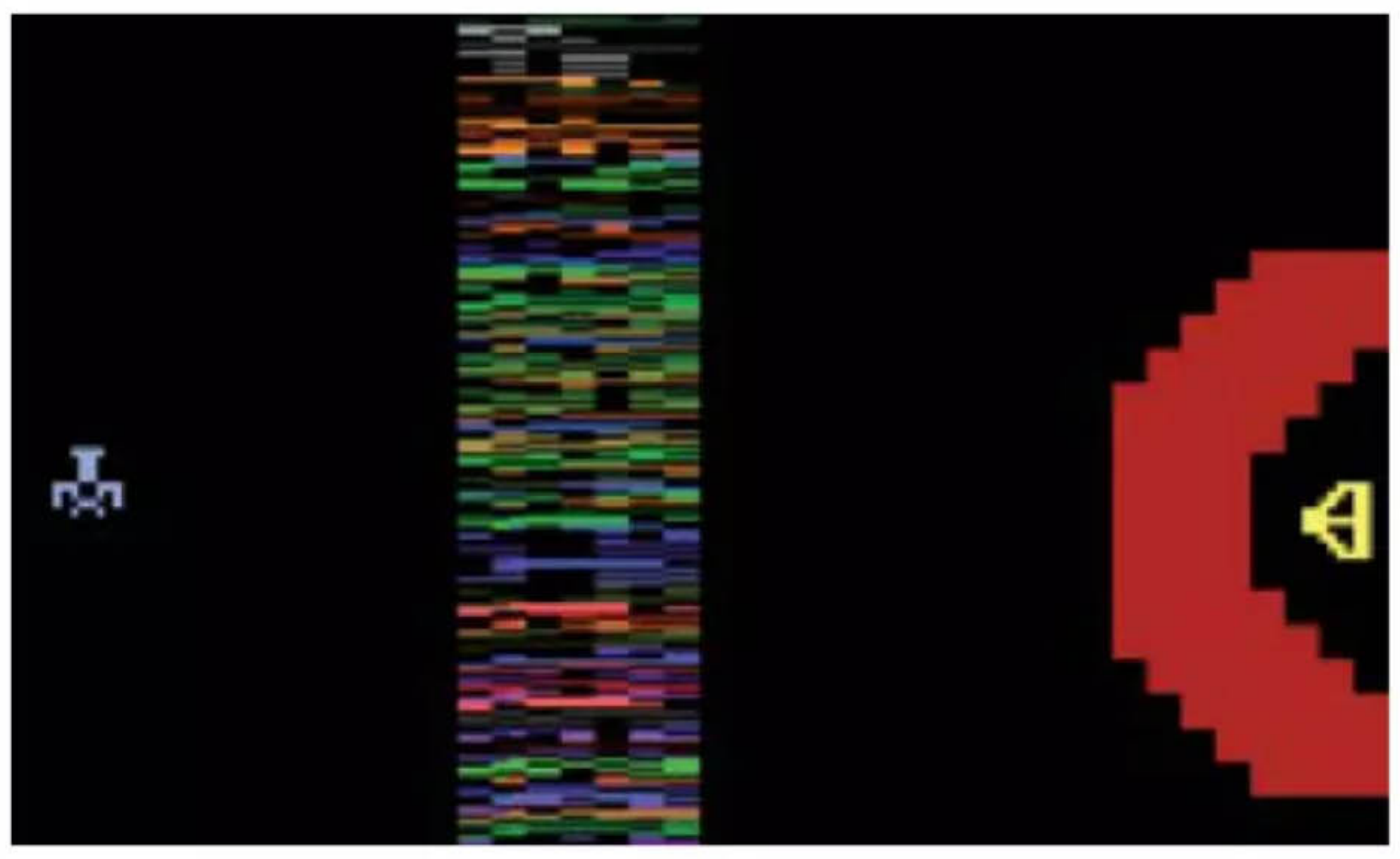
Atari didn't invent the use of vector graphics in arcade games – that honour goes to Cinematronics – but the slew of successful vector games it released throughout the Eighties certainly resonated most with gamers. With soaring hits like *Asteroids*, *Tempest*, *Battlezone* and *Star Wars*, Atari's vector output forms a large part of its most iconic and popular arcade games, and not only helped to popularise the graphic style but also cemented Atari's prominence in arcades.





YARS' REVENGE

Developed by Howard Scott Warshaw, and starting out as a port of *Star Castle*, *Yars' Revenge* went on to become the 2600's bestselling original title after some inspired design. Despite being played over a single screen, it has deep gameplay and a detailed back story, which got explained in a comic book that came with the game. Telling the tale of a race of insect humanoids who are trying to save their home from malevolent aliens, your mission is to destroy an enemy mega-weapon. It's a defining game for Atari's console.



THE 9-PIN JOYSTICK PORT

It might seem throwaway, but the 9-pin plug that Atari Inc helped popularise through the 2600 made a huge impact on the gaming industry. Virtually everything, from the Mega Drive to the 3DO, supported it, meaning you could effectively plug a 2600 joystick into your console and start playing. It would be many years later before consoles and PCs started using the now-standard USB format.

RIGHT CONTROLLER
POWER ADAPTER
LEFT CONTROLLER

MISSILE COMMAND
SUPER BREAKOUT
QIX
GALAXIAN
PAC-MAN
Your greatest challenge lies ahead–and downwards.
ZORK I
INFOCOM

> “MANY OF ITS GAMES INFLUENCED A LOT OF MINTER’S MEMORABLE CLASSICS”

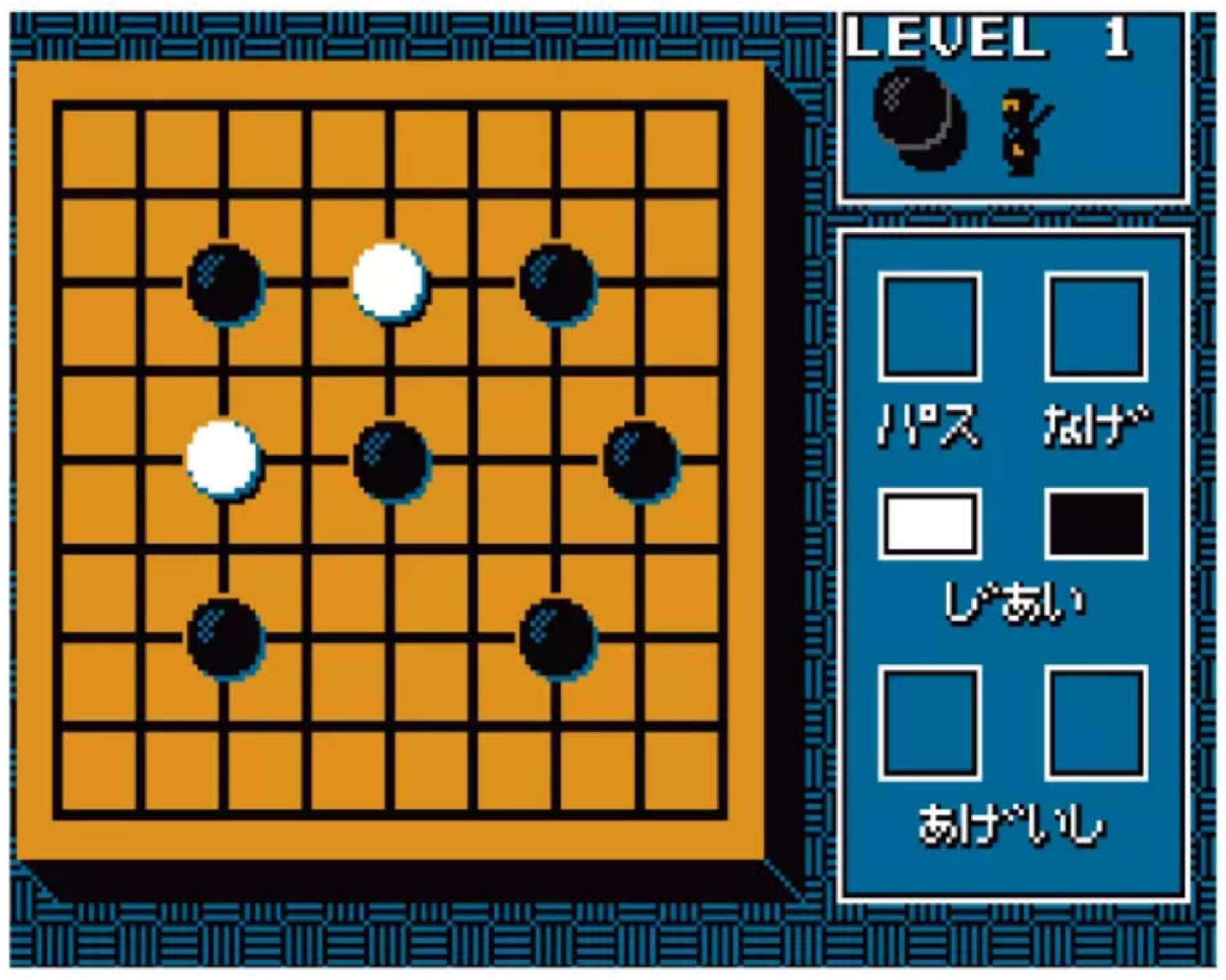
ATARI INC’S INFLUENCE WAS EVERYWHERE...

THE ATARI 8-BIT FAMILY

The early Atari 8-bits originated from a chip that was supposed to power Atari’s follow-up to the 2600. Ray Kassar had other ideas, however, wanting to instead use the chip in a computer to combat Apple’s range of micros. The original systems were released in 1979 and were called the Atari 400 and 800. These were later replaced by the 1200 and numerous other XLs in 1982, and later the XE range, which began appearing from 1985. Numerous classics made their debut on Atari’s family of micros, including *Archon: The Light And The Dark*, *Rescue On Fractalus!*, *Boulder Dash*, *Koronis Rift*, *Bruce Lee*, *Ballblazer* and *Spy vs Spy*.

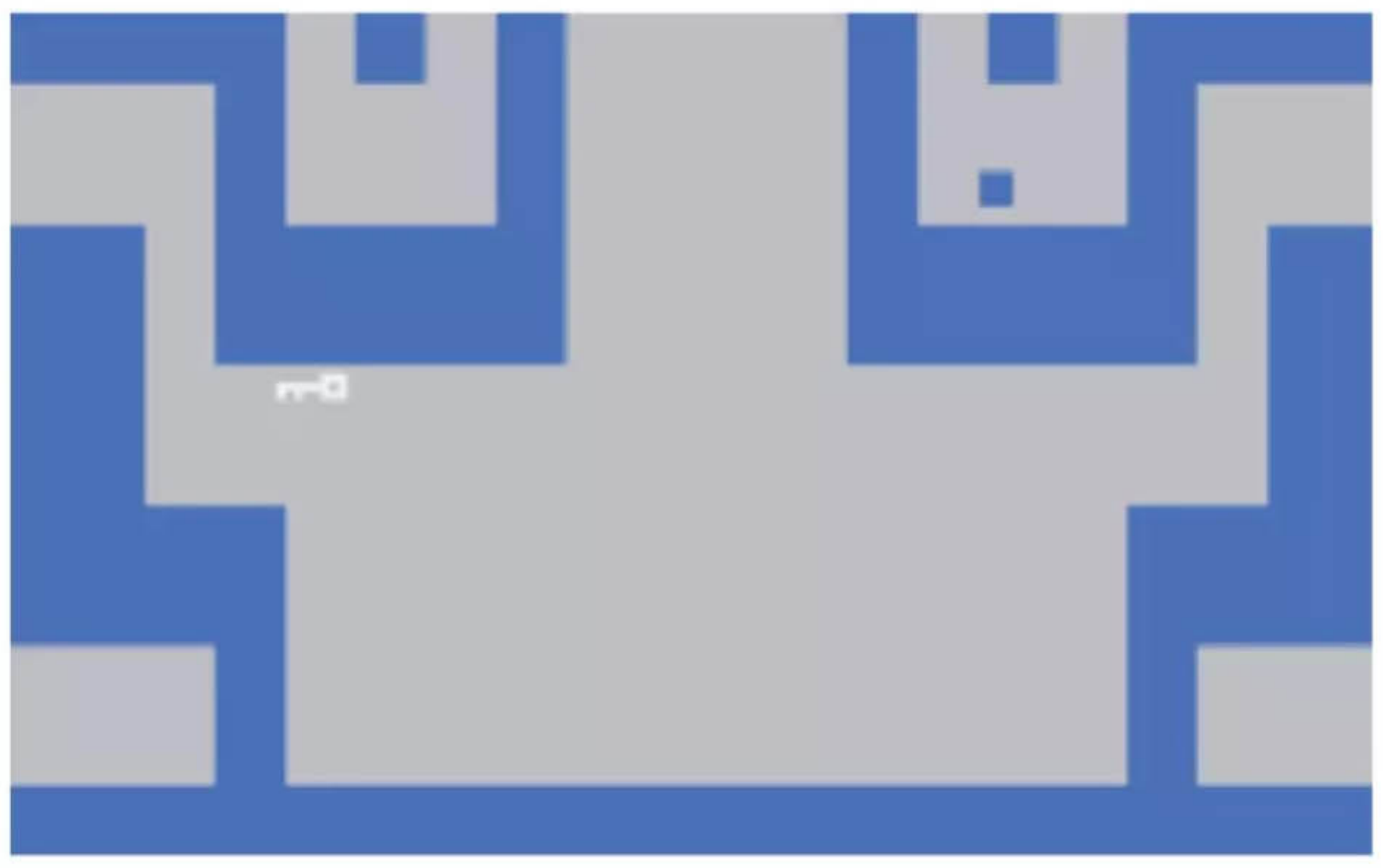
THE ATARI LOGO

The Atari name is said to have derived from a ‘check mate’ term used in the ancient Chinese draughts-style game, go. The term means ‘to hit’. Nolan Bushnell was a massive fan of Go, and would play it regularly, so this little nugget of information makes perfect sense.



JEFF MINTER

Jeff Minter is an interesting offshoot of Atari’s reach, because he wasn’t involved with either company until he worked for Atari Corporation. And yet Atari Inc is still important here, as many of its games influenced a lot of Minter’s most memorable classics. *Gridrunner* was inspired by the excellent *Centipede*, while *The Empire Strike Back* led to the trippy *Attack Of The Mutant Camels*. It was *Tempest*, though, which would impact greatly on Minter’s life, as aside from his own variations – most notably *Space Giraffe* – he created the truly sublime *Tempest 2000*, which was easily the best game to grace Atari’s ill-fated Jaguar.

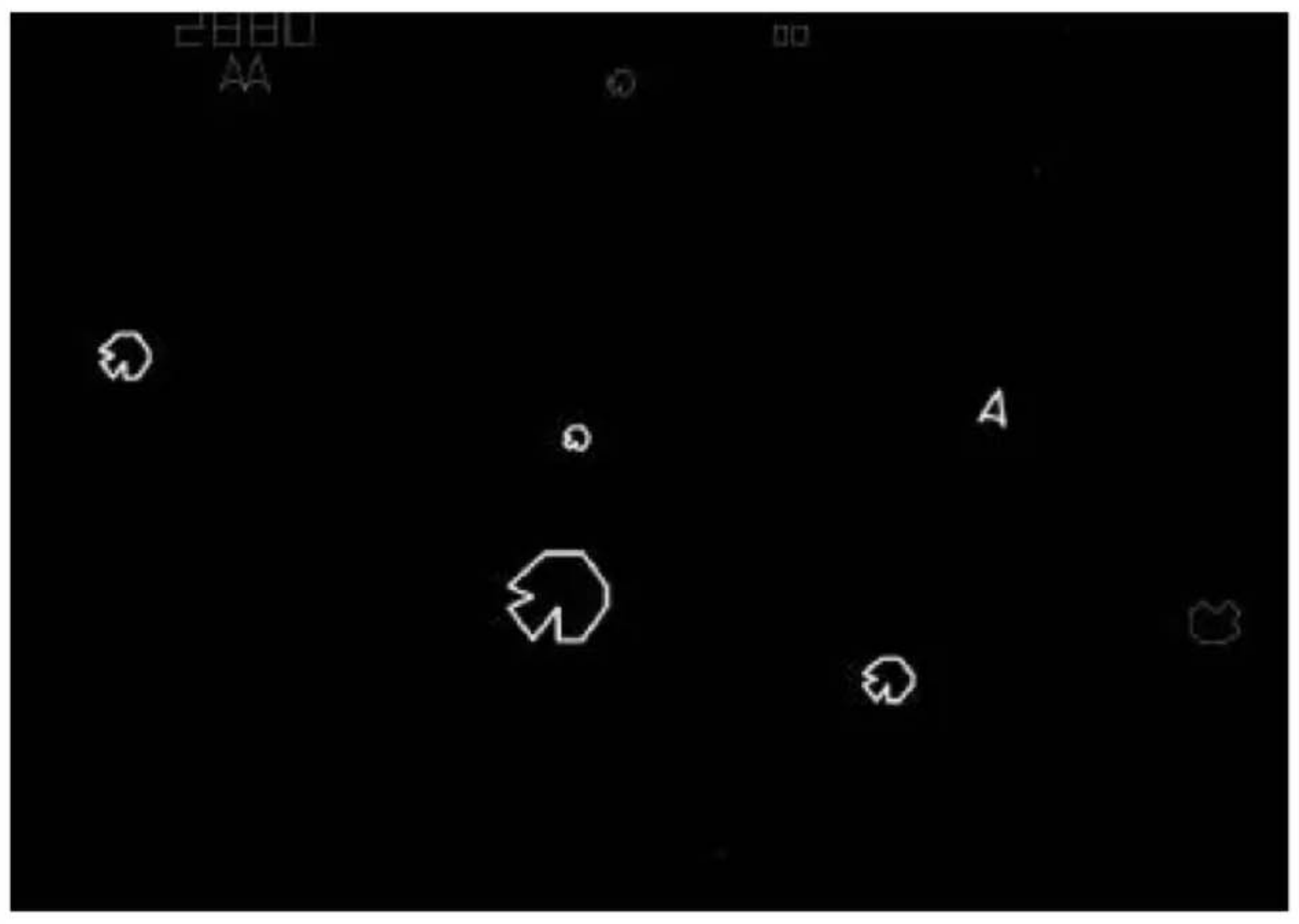


EASTER EGGS

Atari Inc was infamous for not crediting its programmers for their work. However, disgruntled coders often got around this by incorporating hidden messages in their games. The first well-known example of this happening in a home videogame was in the VCS game *Adventure*, the famous Easter egg seeing its programmer, Warren Robinett, credited for making the game. According to Robinett, it was Atari that dubbed these secrets ‘Easter eggs’, with the term relating to the fact that players would hunt them out. There’s also a clever one when you approach the Death Star in *Star Wars*.

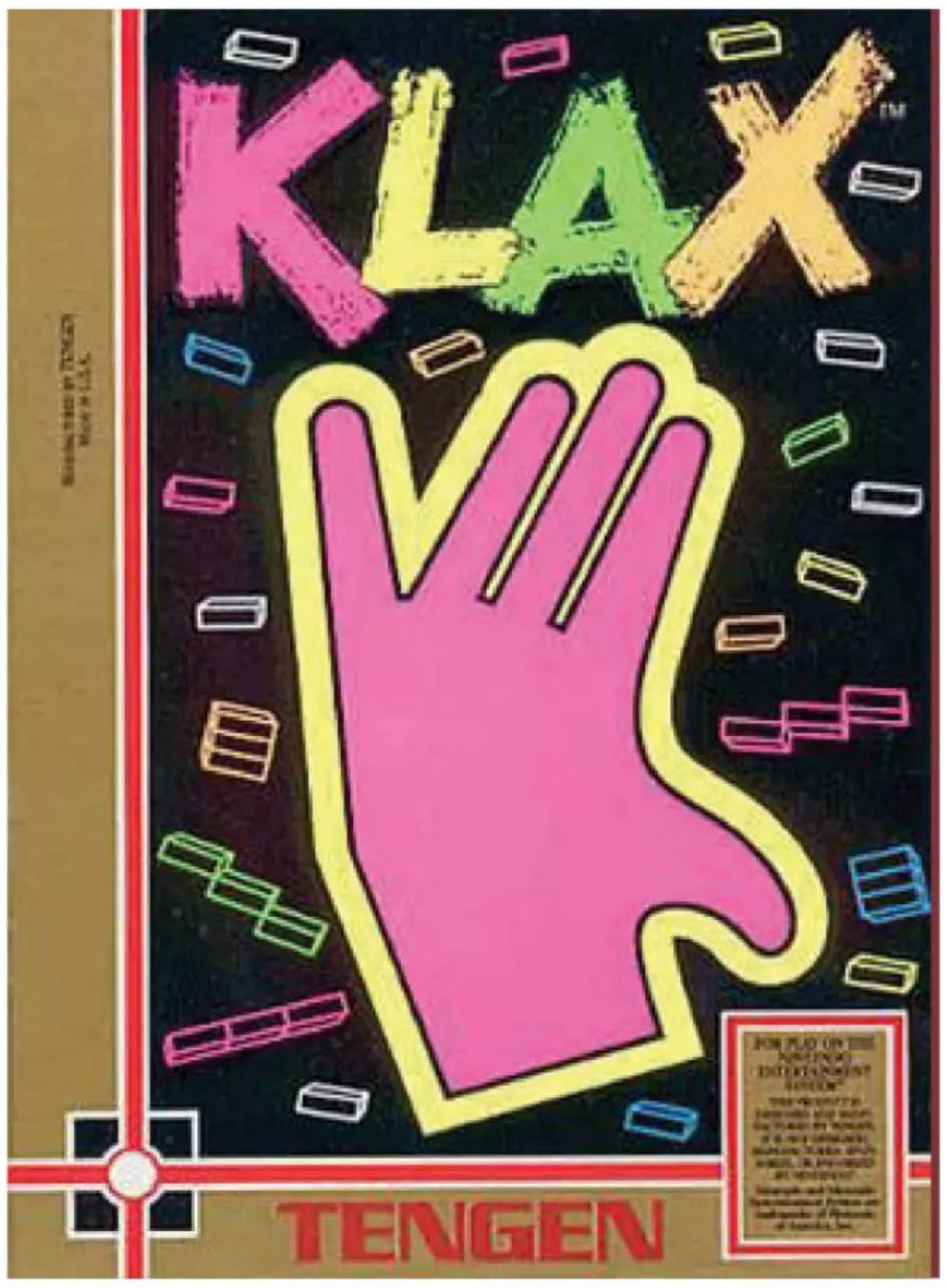
ASTEROIDS

When Lyle Rains, Dominic Walsh and Ed Logg came up with the idea for their vector-based shooter, little did they know that it would go on to become Atari’s most successful arcade game. Hailed as one of the most important games of the famed ‘golden age’ of the arcades, it sold over 700,000 units and influenced numerous other games of the period.



FORMING TENGEN

When Warner Communications retained the arcade division of Atari Inc, resurrecting it as Atari Games, it was bound by an agreement with Jack Tramiel that it would not encroach on the domestic videogame market using the Atari name. To get around this and try to profit from publishing Atari arcade games on home consoles and computers, it decided to set up a new label. That label was known as Tengen, borrowing another term from go. Tengen had very close ties with Namco through Warner’s selling of Atari Games to Namco in 1985, and Tengen was taken to court by Nintendo twice, once for releasing unlicensed games for the NES and on another occasion over a copyright breach in *Tetris*. The label was disbanded in 1994 by Time, following Warner Communications’ merger with magazine publisher Time Inc.



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NES VERSION
POWER
RESET

NEARLY GETTING TO RELEASE THE NES

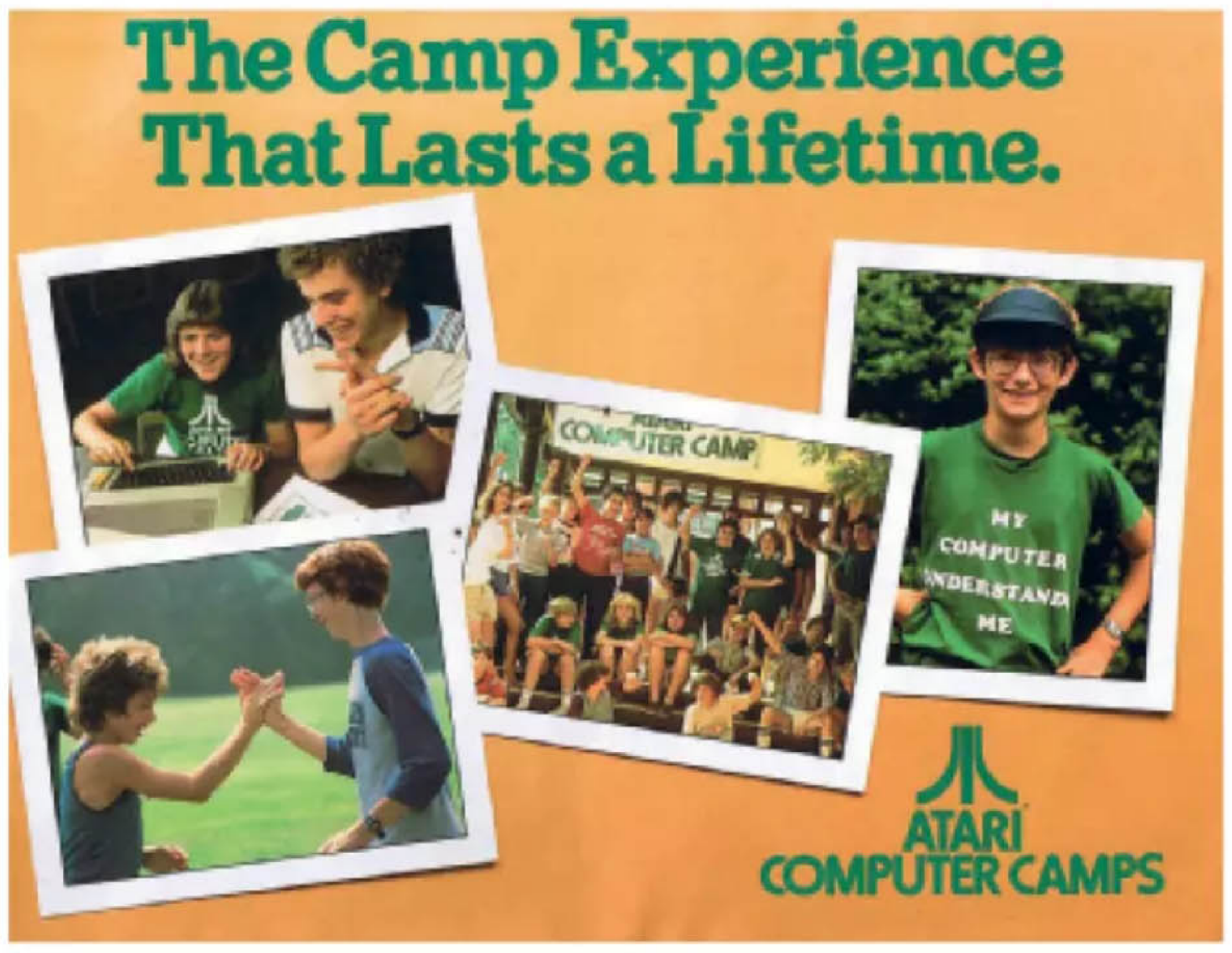
This is a particularly interesting nugget of information, as it could have single-handedly defined Atari's fortunes after the videogame crash. Atari had already released several Nintendo games on its Atari 2600, so Nintendo offered a one-sided OEM deal, which saw Nintendo as the sole supplier of all parts and internals and Atari being allowed to simply design the case and put its name on it. The only proviso? It had to be ready by Christmas '83. Unfortunately for Atari, the loss of Ray Kassar and the lateness of his replacement – Jim Morgan took a two-month vacation before starting in September – meant that Atari had no time to make the Christmas season. Nintendo head Hiroshi Yamauchi decided to go it alone, and the rest is history. We can only imagine what might have happened to Atari's fortunes if it had signed that contract. We love them for trying though.

ED LOGG

If Ed Logg had never decided to make games, the arcades of the world would have been much sadder places, as he created some of Atari's best games. There would have been no *Asteroids*, *Gauntlet*, *Centipede*, *Road Runner*, *Xybots*, or many other games. The talented programmer is still around, having recently joined Innovative Leisure to make iOS games with many other Atari alumni.

ATARI COMPUTER CAMP

Forming part of Atari's assault on the education market, Atari Computer Camps were where parents could cart off their kids for a few weeks each summer. The camps took kids from between 10 and 16 years old, and ran for two, four or eight-week sessions. In addition to the traditional camp activities, the schedule included a series of computer workshops, as well as lectures.


The Camp Experience That Lasts a Lifetime.
COMPUTER CAMP
MY COMPUTER UNDERSTANDS ME
ATARI COMPUTER CAMPS

ATARI ST

The ST was one of the earliest 16-bit computers and the first to feature integrated MIDI support. Created by Shiraz Shivji, it was released by Atari in 1985 and became highly lauded for its excellent music software, which would be used by a number of musicians, including White Town, The Berzerker, Luke Vibert and Mike Oldfield. Its head start on the Amiga also meant that it hosted a number of excellent titles that weren't available on its rival, like *F-15 Strike Eagle*, *Get Dexter* and *Oids*.

KILLER APPS

Atari Inc created one of the first examples of a 'killer app' when it purchased the *Space Invaders* licence and released a home version for the 2600. Its success paved the way for a steady stream of arcade conversions on the console – many from Atari's own arcade catalogue but just as many licensed from other developers too. Probably the most infamous was the 2600 port of *Pac-Man*. Though it became the bestselling game on the 2600, it is regarded as a disappointing version and was critically blasted.

TIE-IN COMICS

More clever marketing saw Atari commission a series of comic books to package with its VCS games. Several were themed on videogames, including *Centipede*, *Swordquest* and *Yars' Revenge*, and there was also a four-part comic book series titled *Atari Force*, which starred a band of intergalactic hero types. Packaged with the sci-fi games *Defender*, *Star Raiders*, *Berzerk*, *Galaxian* and *Phoenix*, *Atari Force* was later spun into a full comic book series. A total of ten comics were created for VCS games and all were published by DC Comics, a subsidiary of Warner.

ITS RISK-TAKING

Despite what you might think, prior to the crash the domestic industry hadn't been in decline. In fact, it had never been in better health. The early Eighties gave rise to more consoles, more peripherals and more games than ever. To stay at the top, Atari spent big on the most attractive licences and confident over-ordering of stock. Rushing product out the door to meet profitable holiday seasons resulted in cancelled orders from retailers and worthless assets piling up in warehouses. Saturation, overproduction, confused consumers and poor product soon took their toll on the company, and in a single year, Atari's profits went from $2 billion in 1982 to a loss of $539 million in 1983.

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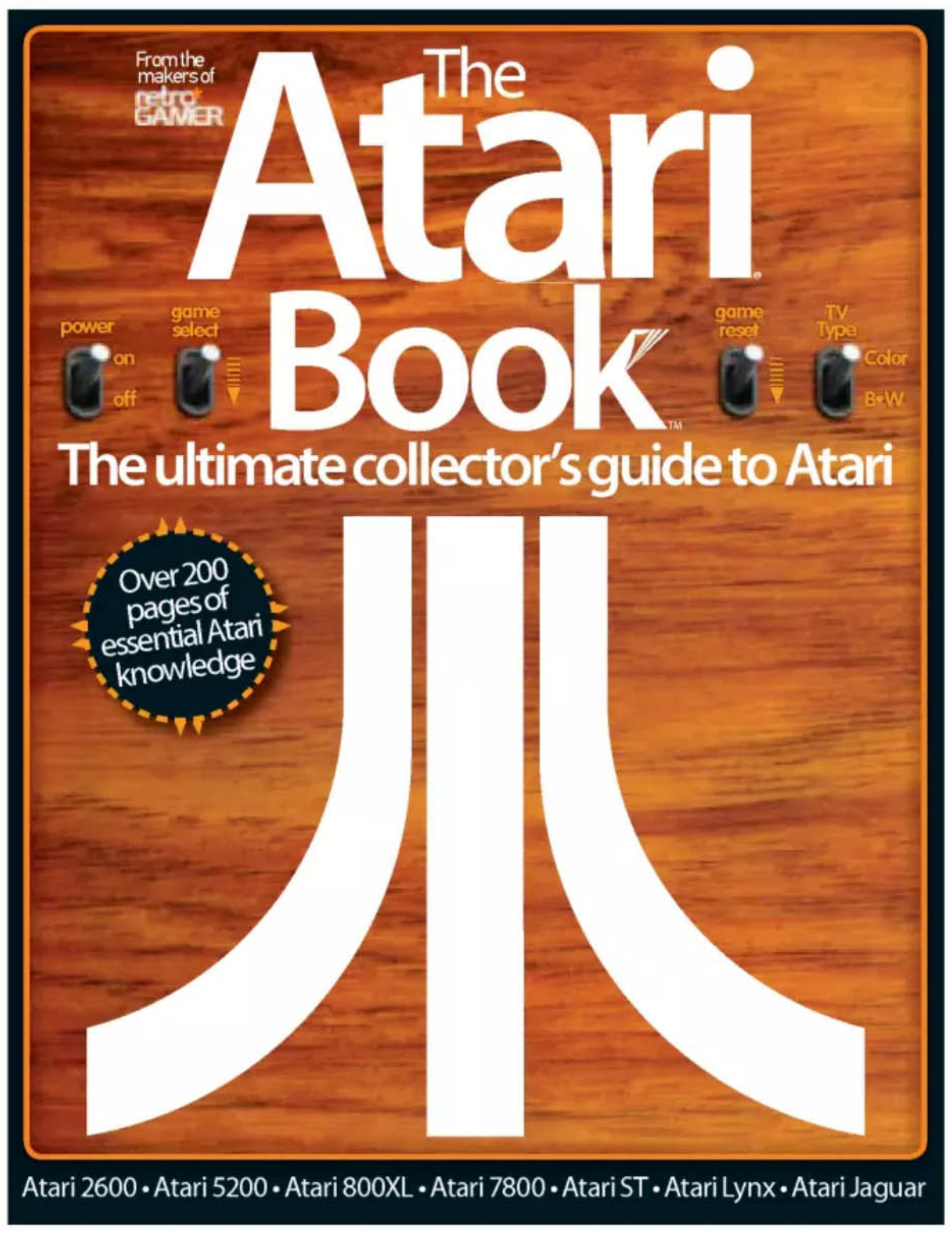
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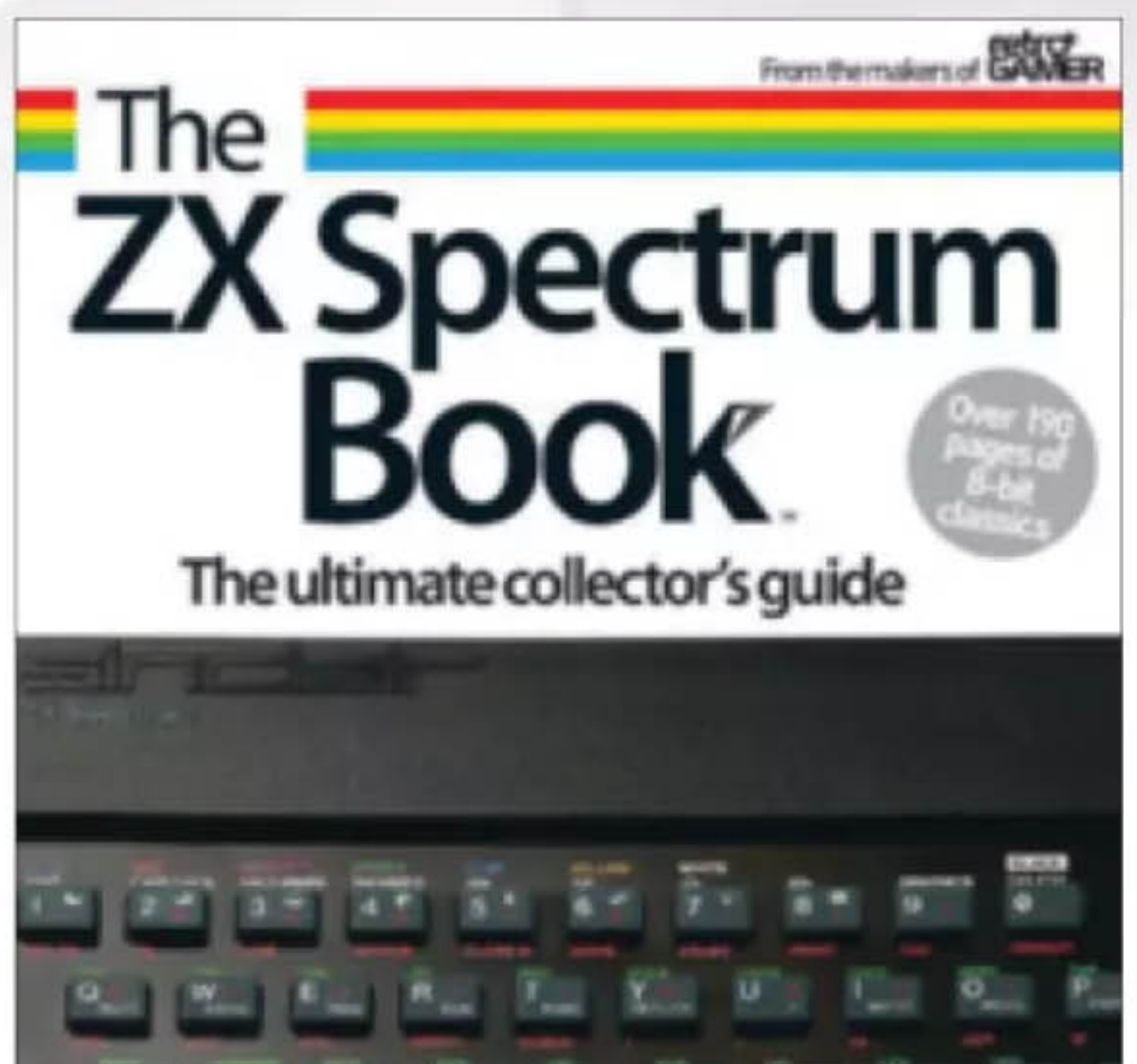
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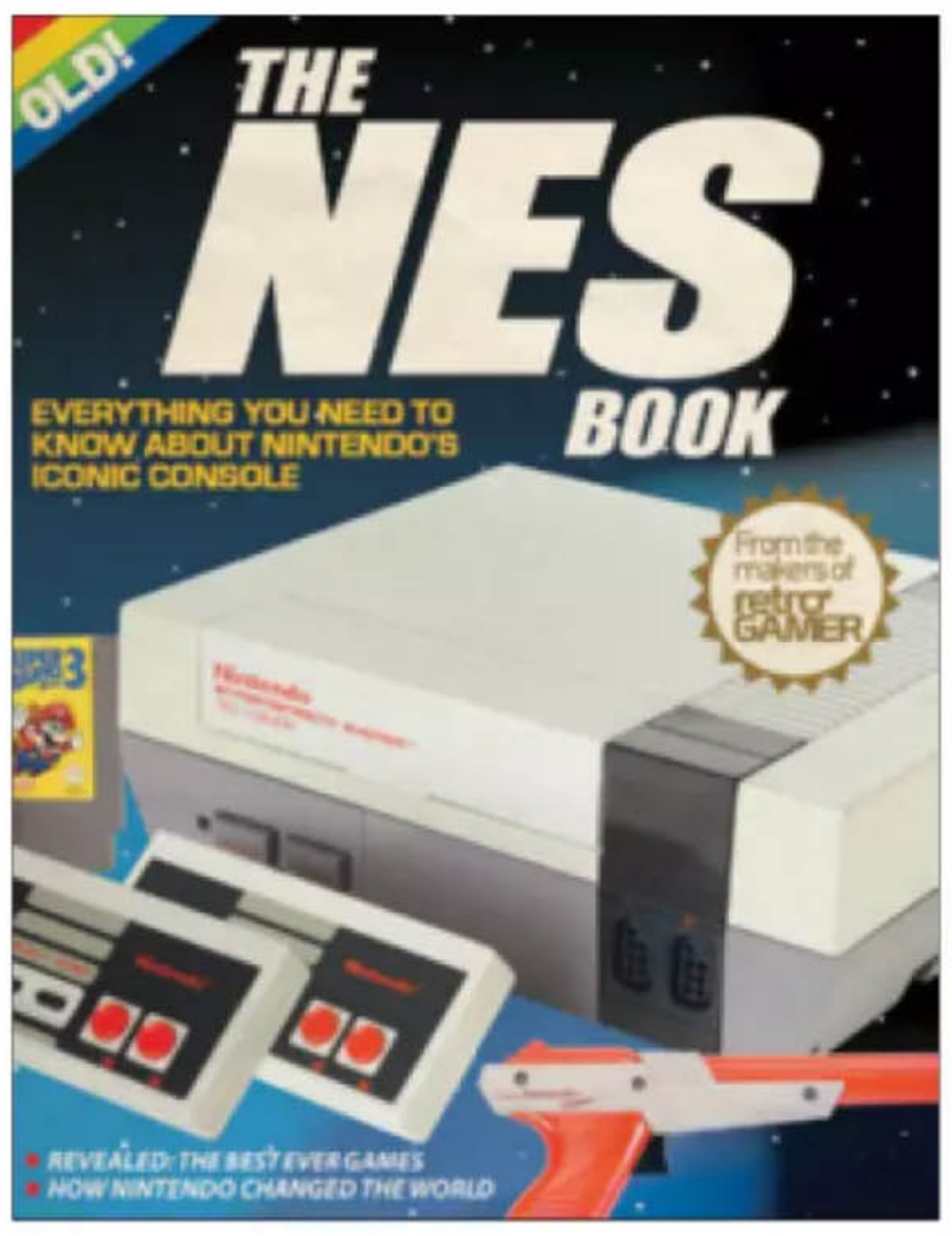
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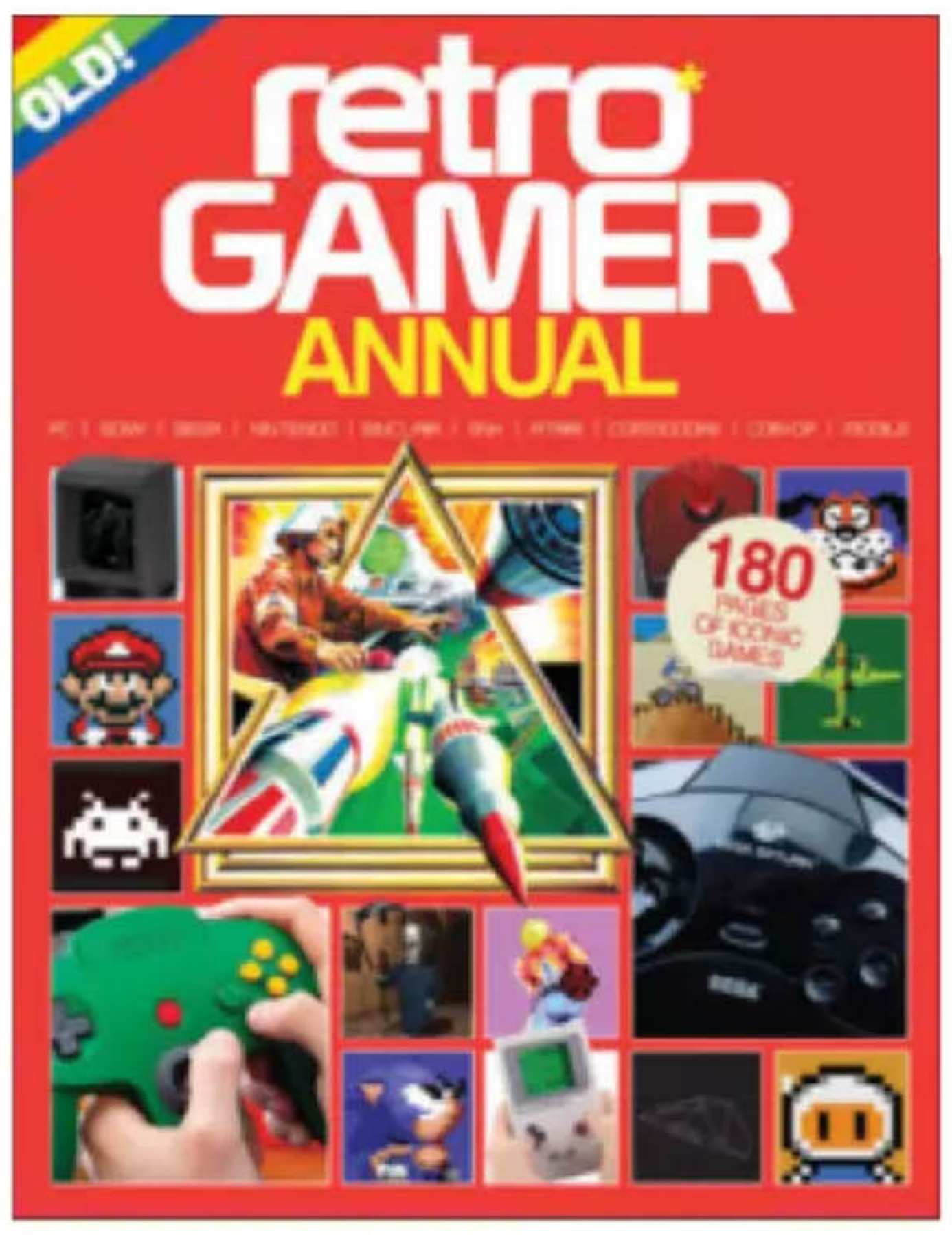
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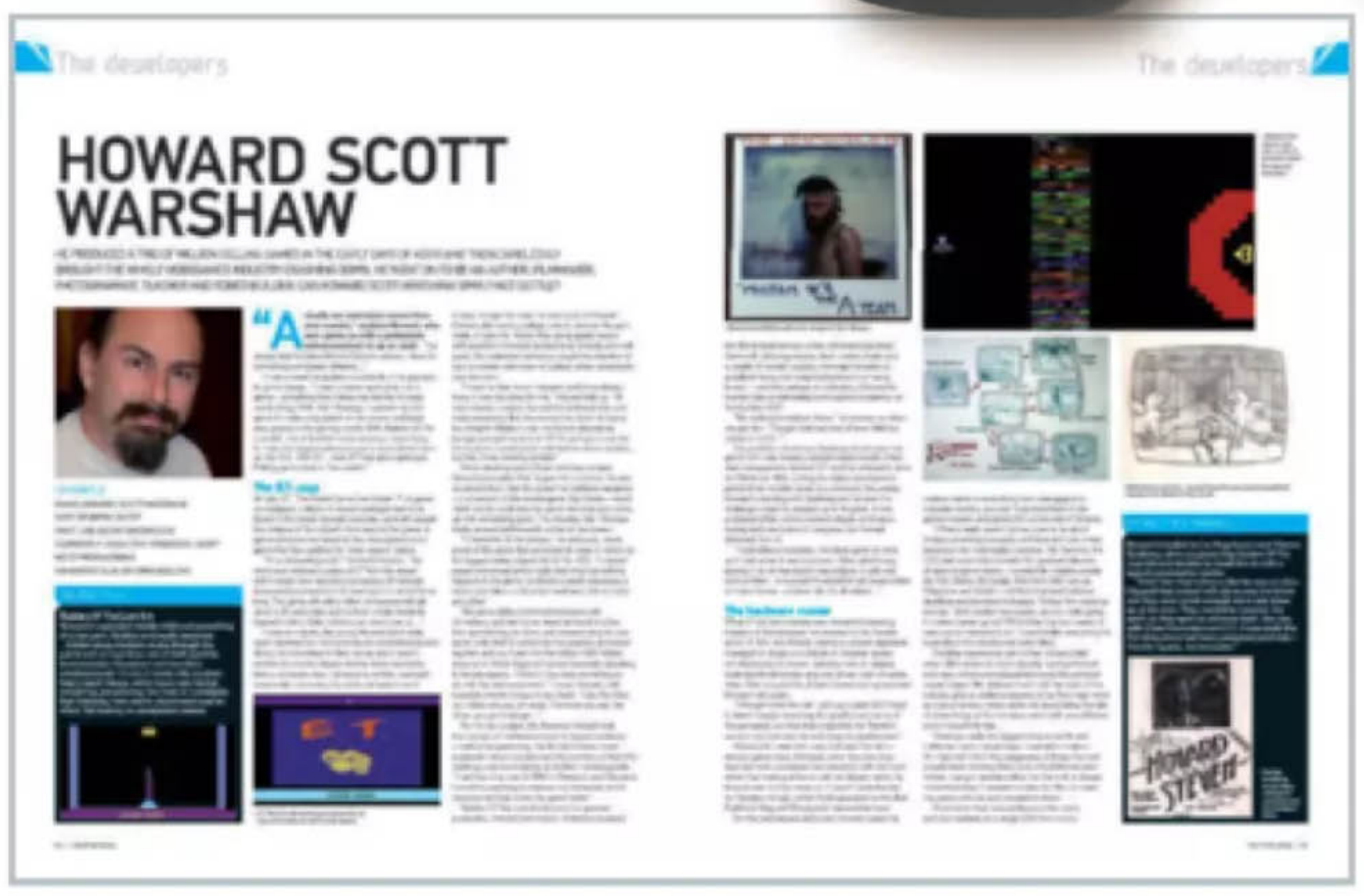
HOWARD SCOTT WARSHAW

The Developers

Notable industry legends from Atari's history – including Nolan Bushnell, Allan Alcorn and David Crane – reveal all

STAR WARS

The Games

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